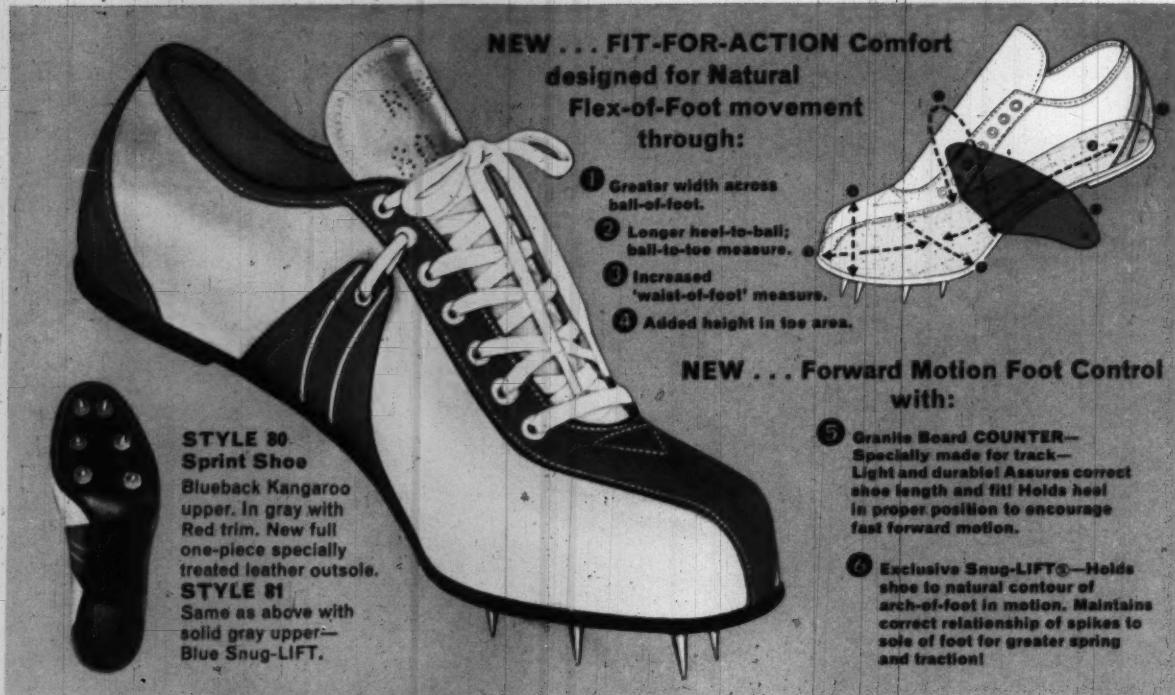


S C H O L A S T I C

# COACH

NOVEMBER 1960 • 35¢





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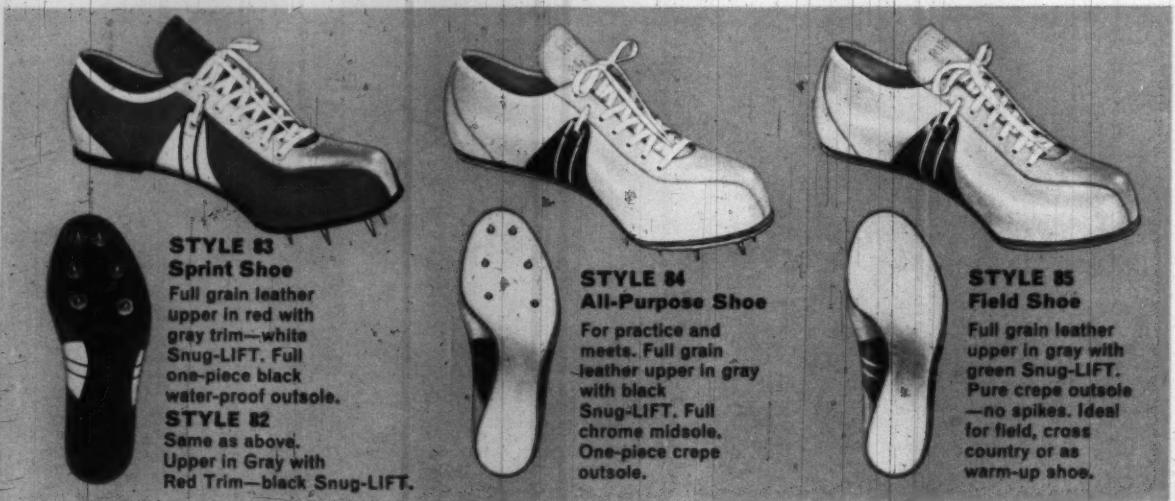
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# SCHOLASTIC **COACH**

Reg. U. S. Pat. Off.

VOLUME 30 • NUMBER 3 • NOVEMBER 1960

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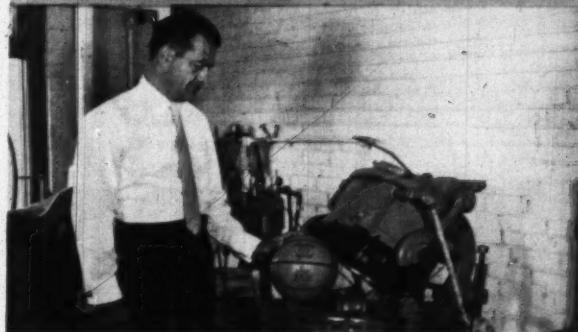
*Chuck Farrington*

DIRECTOR,  
RAWLINGS SCHOOL AND COLLEGE DEPARTMENT

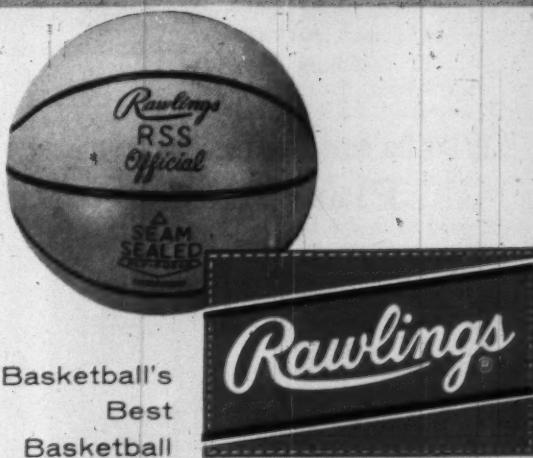


Below is the construction chart of the Rawlings RSS. Each step in this construction employs carefully controlled and supervised machine operations. These machines assure maximum consistency. Note that the center is nylon wound—perfectly round. RSS construction provides maximum soft touch and maximum resiliency. But not every operation can be done by machines.

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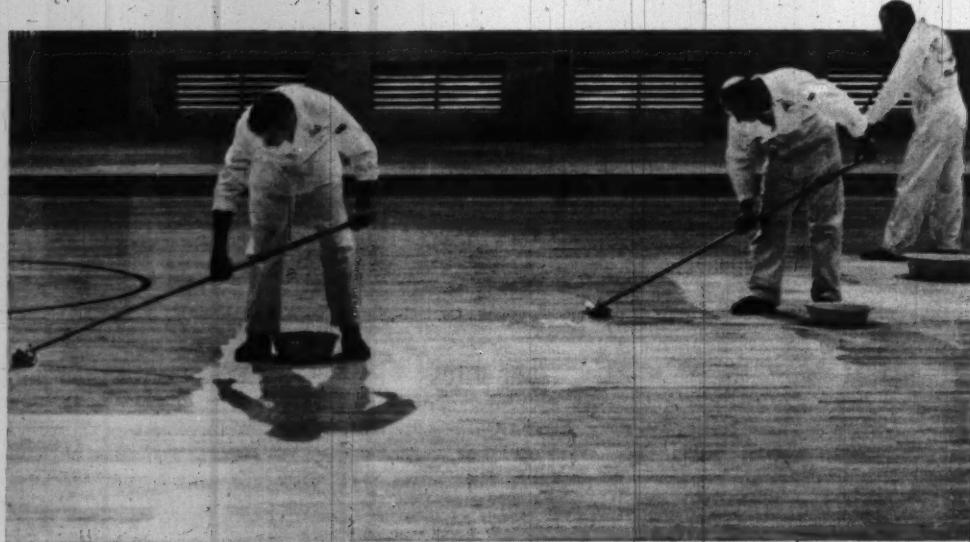


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## A coach who never "fudges"

**W**HENEVER a big-time college signs a coach to a long-term contract, you can bet your bank book that the fellow has just won the Rose Bowl Game, been named coach of the year, or run-up a substantial victory skein.

That's what makes the University of Portland so unique. They signed their basketball coach, Al Negratti, to a 25-year contract after a losing season—he won 11 and lost 15 last year.

To the everlasting credit of the good Portland fathers, they can recognize excellence when they see it. Not only excellence on the court, but where it counts even more—in educational perspective.

Coach Negratti is an unusual man. He's a big-time coach who believes that standards and education come first. Though he has no conference policemen breathing down his neck—Portland is an independent—Negratti refuses to "fudge." You live by the rules and hit those books, or you don't play for him.

Two years ago he dropped a 6-9 and a 6-11 player when they began believing that basketball was their only purpose in going to college. And last year, when his three big stars began goofing off, he waited for his big home game against Oregon State before lowering the boom. Though the crowd shrieked all sorts of abuse at him, though a Portland win would have been a mighty accomplishment, Coach Negratti proved he was 10 feet tall—he kept the players on the bench for the entire game!

Negratti's philosophy is summed up in these simple words:

"I've always felt keenly about the necessity of maintaining discipline and having our players do a creditable job in the classroom. One of the greatest evils in collegiate athletics, I believe, is the exploitation of athletics for the sole purpose of winning games and publicizing a college. Too often we find outstand-

ing athletes completing their eligibility at a given college and then suddenly finding themselves without enough credits to graduate. I'm always at a loss to know just what these boys were doing academically while they were competing in athletics."

It's so heartening to know that Al's administration stands squarely behind him. "Al embodies everything we want in our athletic program," asserts the Reverend Paul E. Waldschmidt, Portland vice-president. "Above all he has what we feel is the proper perspective and recognition of the place of intercollegiate sports in the total educational program."

And we love his concluding remark: "If he does well during his 25-year trial period, we'll give him a long-term contract!"

**S**HORTLY after raising this loud locomotive for the Portland coach, we had the pleasure of hearing his philosophy echoed by Woody Hayes at the annual father-and-son sports banquet at Roslyn (N. Y.) High School.

Like most outspoken people, the Ohio State coach is a somewhat controversial figure. But you have to hand it to him. Though one of the biggest of big-time coaches, he pays more than lip-service to ideals and educational perspective.

Few people—outside the Big Ten—know that Woody exercises a tremendous influence over his players, that he's on their tails all the time—prodding them to hit the books, to get their degrees, to make something of themselves.

As he explained it in his tremendous speech at Roslyn:

"Every player coming to us is eligible for the normal \$1,200 a year grant-in-aid. Now, we have a stadium that seats 80,000 people, and it's packed for every one of our games. So we figure every starter is worth \$150,000 to us.

"What can we give him in return? Our obligation, I believe, is to see that the boy isn't cheated. And the way to do this is to make sure he gets his degree. A college degree, according to actuarial figures, is worth at least \$100,000 in lifetime earnings. If the boy doesn't get his degree, then I've failed at my job."

And Woody works just as hard at this as at his blocks and tackles. The academic mortality rate of college students is extremely high—only about 40% of all incoming freshmen go on to get their degrees. At Ohio State, however, 75% of the entering football players get their degrees. And 98% of those who play out their three years, graduate.

Woody is particularly proud of his 1959 scholarship men—all 28 of them were back on campus in 1960.

Woody's "secret" is simple: "Get a good boy, a bona fide student, then don't let him live until he gets his degree."

**T**HIS is the sort of letter that makes an editor's day. It was sent by a Canadian coach after we answered his S.O.S. for some material on high jumping:

"Thanks very much for the article. It was just what I needed. With all its simplicity and wisdom, it certainly saved me a lot of time and gave me some valuable ideas. I also took the liberty of lecturing on it at a clinic, and my colleagues loved it.

"I gave a few of them some of my recent issues of *Scholastic Coach*. And knowing these men as I do, I know they're not going to like the idea of a younger coach like myself getting the jump on them in the upcoming track season. They're also eager to pick up such fine material, and you can expect a raft of subscriptions. Thanks again, and I wish you continued success with your excellent magazine."

Thank you, buddy.

STILL NUMBER ONE!



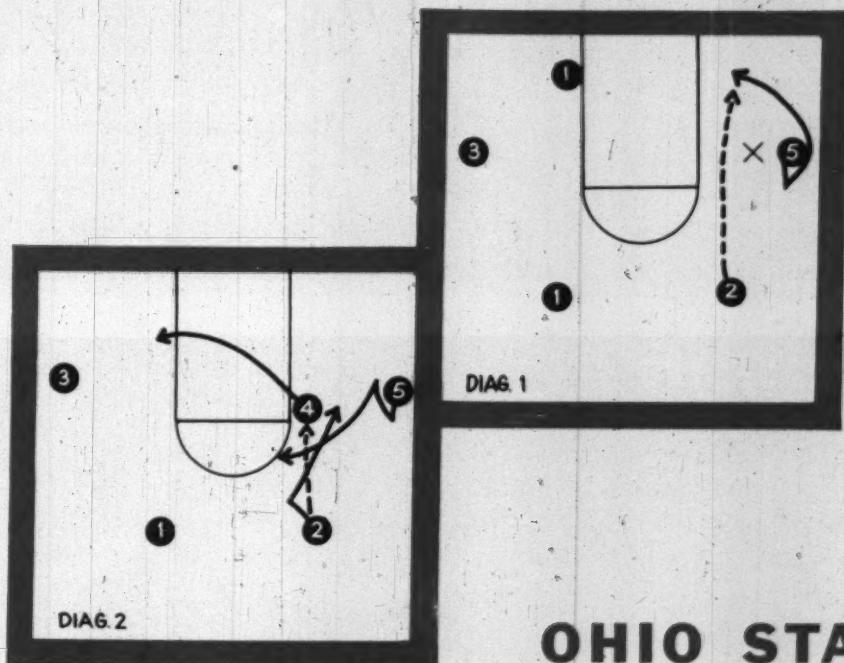
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## OHIO STATE'S

### Patterned Front-Court Movements

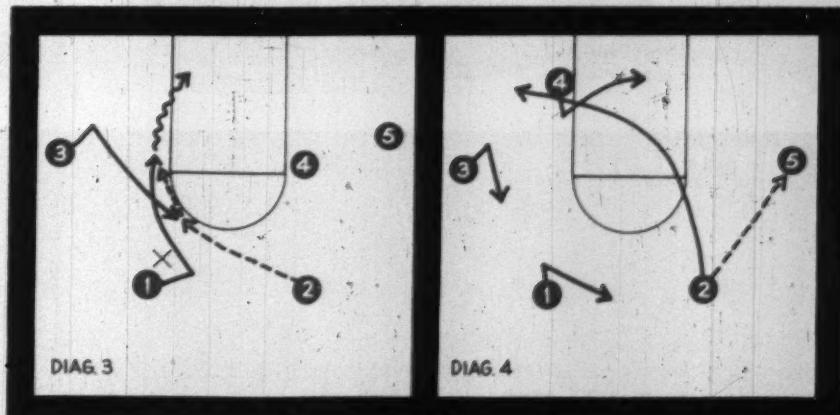
**S**INCE our teams have averaged 80.9 and 90.4 points per game, it would appear that we're primarily a "run and shoot" team. But many factors must be considered when analyzing a team's offensive power, such as team speed, type of attack, control of boards, shooting ability, etc. Certainly if a team has a poor defense, it quite naturally will have more scoring opportunities. This may well be the case in our situation, and we plead guilty! Though we do attempt to play sound defense, it's difficult to enhance our defensive ranking because we don't play ball control. We hope to point this out in our basic thinking about our offense.

We hope our offense will create enough movement to compound defensive problems. We also hope it will afford us proper floor balance, not only for defensive strength and offensive rebounding, but also to allow us the basis of attack—two- and three-man games.

We attempt to plan our so-called "secondary offenses," spending practice time each week on each phase. We place the following into the category of

(Continued on page 60)

By FRED TAYLOR  
HEAD COACH



**FAKE IN, DRIVE OUT**



**DRIVING THE BASELINE**



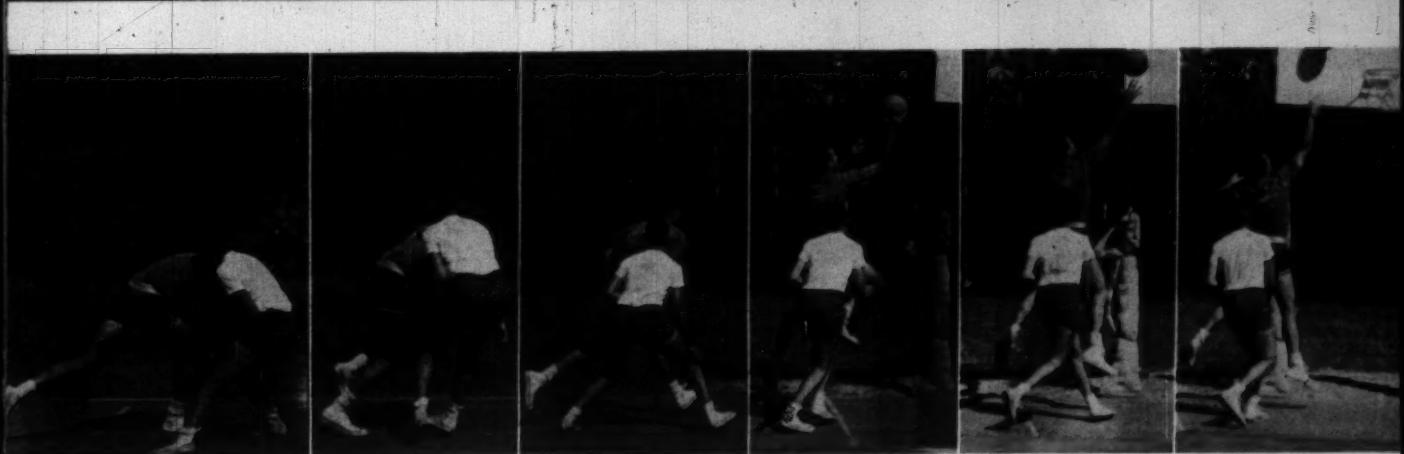
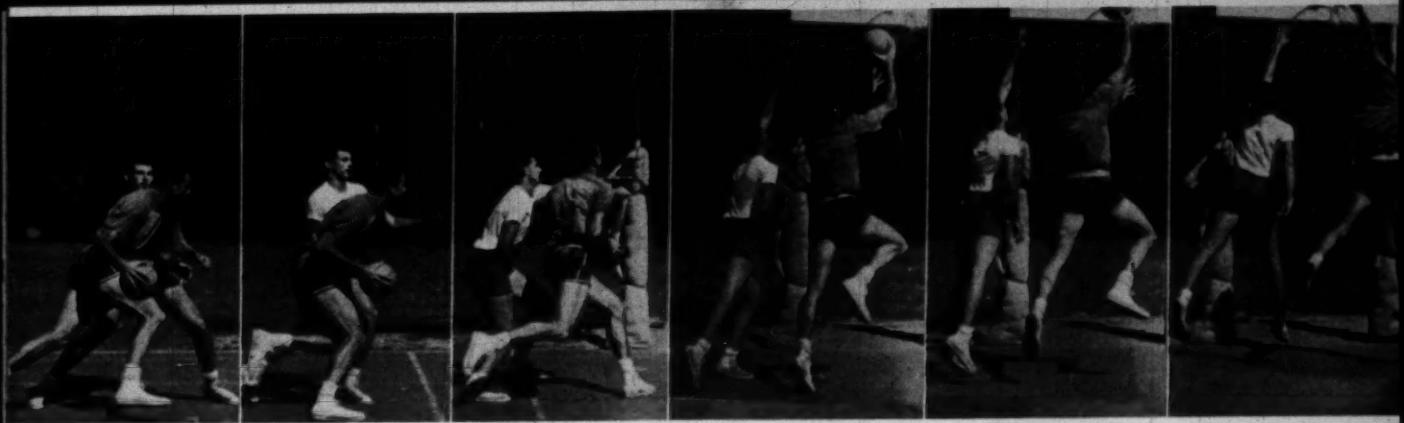
## **Four Driving Moves**

**DRIVE FROM OUTSIDE**



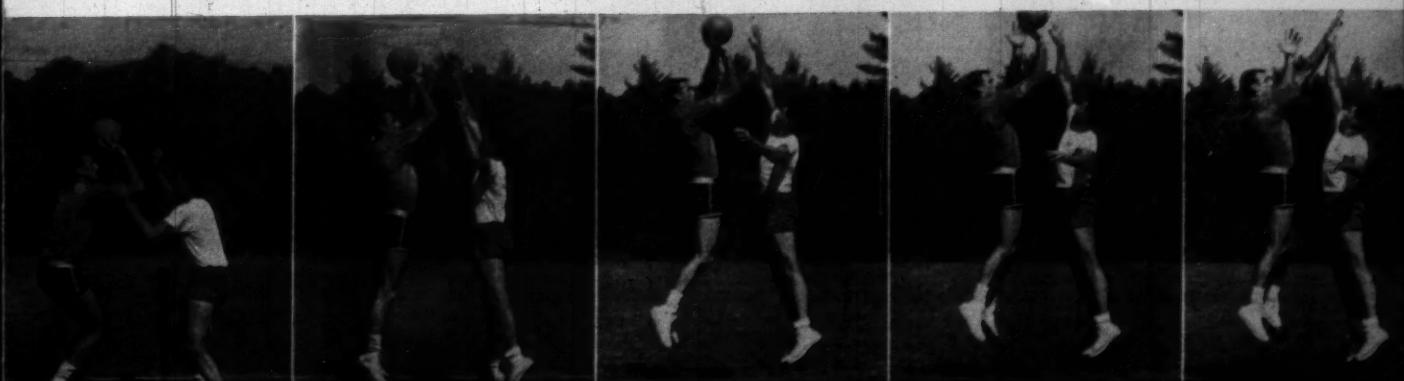
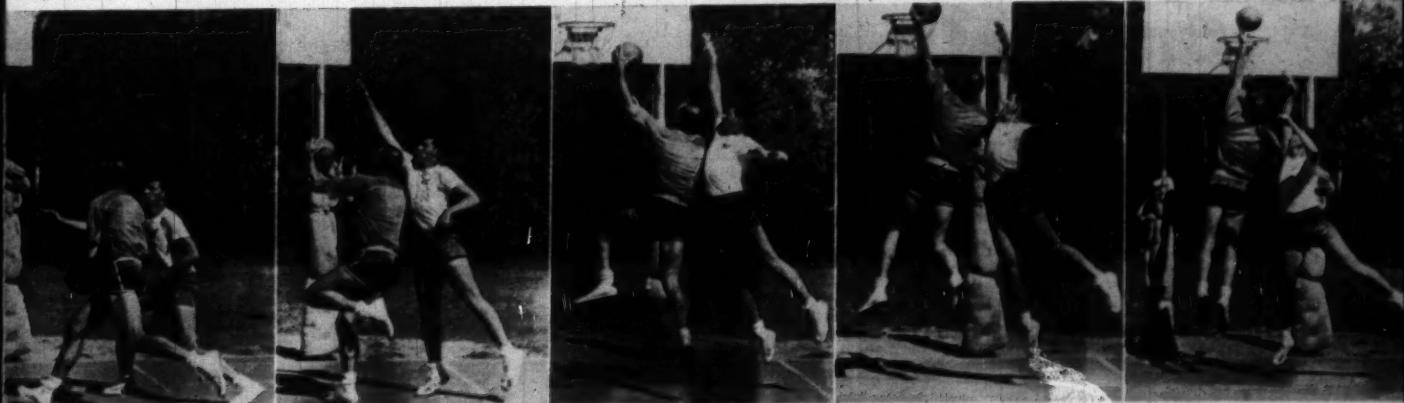
**DRIVE FOR THE JUMPER**

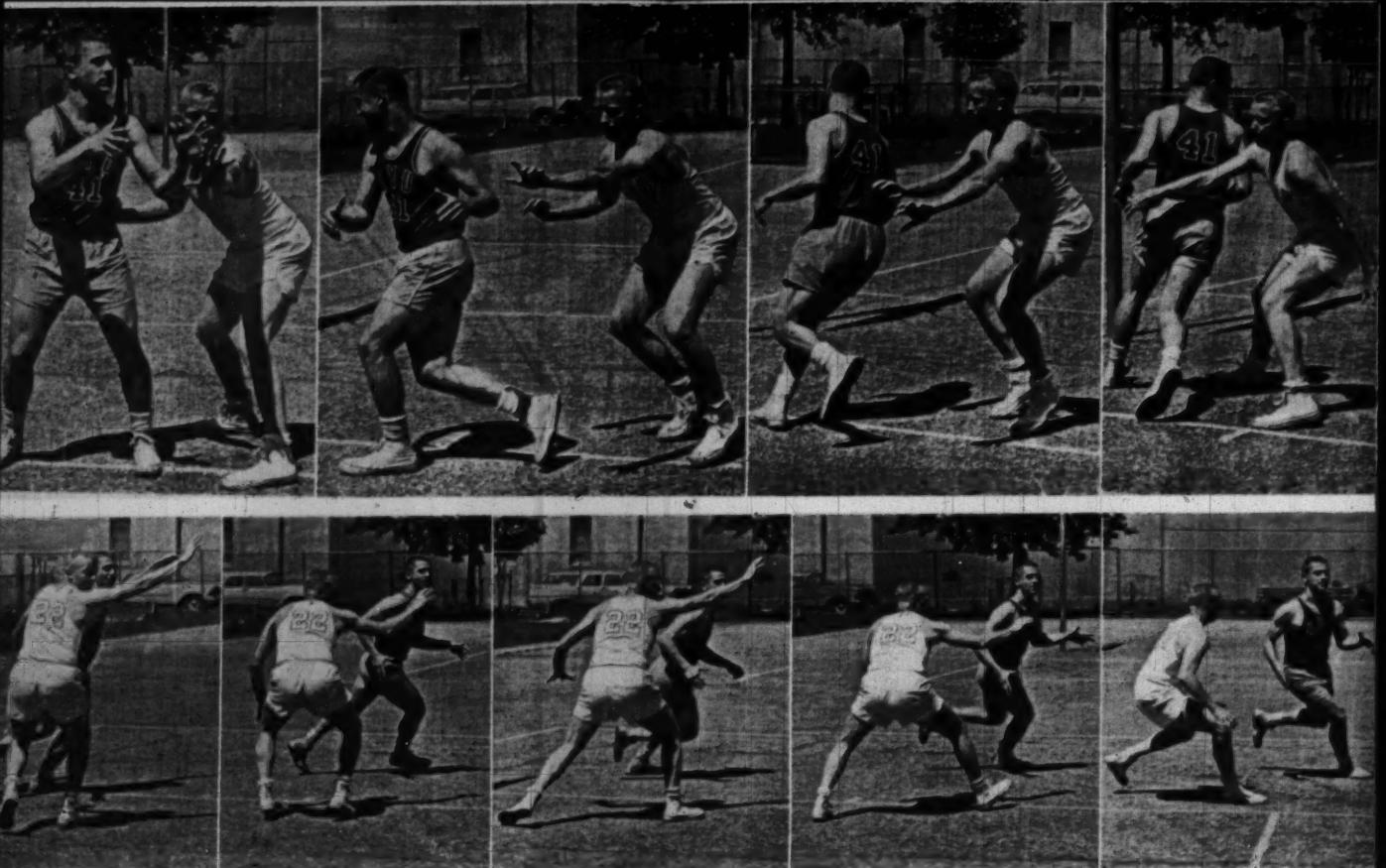




**by Bob Pettit**

*Photos taken at Camp Woodbrook, Lake Scipio, N. H.*





## One-on-One Defense

**A**S BASKETBALL scores keep mounting and mounting, the feeling is that defense is being sadly neglected. I don't believe that's true. Defense has just become more difficult—thanks to the incredible acceleration of the game and the perfection of the jump shot, the quick one-hander, and all those fine acrobatic skills.

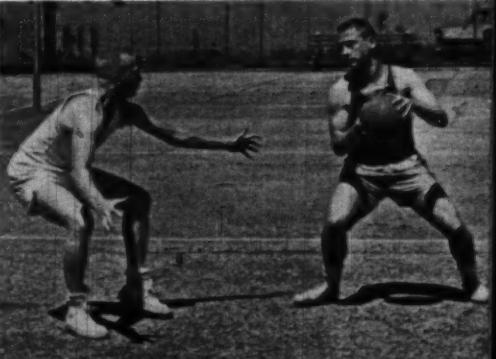
Some coaches have attempted to meet the problem with a deliberate pattern of offense. By carefully controlling the ball, they slow down the tempo of the game, preventing the opponents from playing a fire-engine brand of ball.

This has a salubrious effect on defense. It permits the controlled offensive club, once possession is lost, to organize and concentrate on defense.

The coach who plays a free-wheeling offense has his work cut out for him. It's pretty tough psychologically to ask a group of kids who've been running madly on offense to suddenly put on the brakes and dig in on defense.

Defense is the tough, tedious part of basketball. The rewards

**By LOU ROSSINI, Head Coach, New York University**





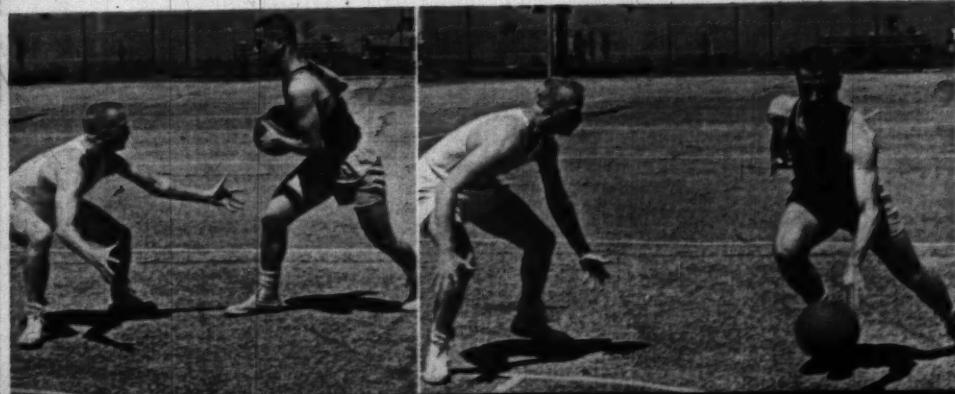
### MOVING WITH THE PIVOT MAN

The guard first takes an up position on the post to prevent him from getting the ball. As the post goes back and around, the guard makes a forward pivot, keeping position on the man. As the post goes into the corner and up, the guard keeps that hand out to prevent him from getting the ball. Only when the post comes up out of shooting range does the guard fall back into his regular stance.



### MOVING WITH THE CORNER MAN

With the corner man in position for a shot, the guard plays up on him to prevent him from getting the ball. He stays close with his hand out to prevent any incoming pass, as long as the corner man is in good shooting range. As the attacker moves up court, the guard maintains position—until the man moves out of jump-shot range. Then he gradually slacks off and assumes his fine, low balanced stance.



aren't as tangible as they are on offense, and the boys have a tendency to let down. That's why so many offensive stars are weak on defense.

Some coaches refuse to worry about these defensive deficiencies. They say, "Heck, we've got the shooters. Let the opponents get their points. We'll get more."

This logic is specious. If you can, by playing good defense, curtail your opponents' scoring, doesn't it stand to reason you can win much easier? Remember, whenever an all-out offensive club has an off night, it will invariably lose. On the other hand, a well-balanced club can be off on its shooting and still win by playing its good defensive game.

Both at Columbia and now at N. Y. U., I've always tried to strike a balance between offense and defense—a balance, mind you, not an overemphasis. For overemphasis on defense is just as unwise as overemphasis on offense.

The success of team defense depends largely on the one-on-one fundamentals. There's nothing very difficult or mysterious about them. But they require a lot of individual desire, concentration, pride and laborious practice.

As soon as the opponent gets the ball, the guard must concentrate completely on him. Some coaches want to force the opponent toward the sideline away from the basket. I like to encourage him to *drive toward the middle*.

In our sluffing defense, that vital middle area is well-protected. And whenever the ball-handler drives into it, defensive help is easily available.

To influence the opponent toward the middle, our guard slightly overbalances to the outside. His stance and action are similar to a boxer's. He spreads his feet comfortably and gets down fairly low. The knees are flexed with the weight balanced a little forward over the balls of both feet—ready to push off in any direction.

The outside arm and corresponding leg (the members closer to the sideline) are slightly extended, the heel of the outside foot being roughly on a line with the inside toe. The outside hand points at the ball to harass a shot, while the inside hand is kept out to the side to deflect a pass or, when the guard is being maneuvered, to reach back and feel for screens.

Ordinarily, the guard's outside knee (the one closer to the sideline) is on a line a couple of inches outside the opponent's outside shoulder. If the opponent drives the sideline, the sideline leg is swung back deeply. If the man assumes a set-shooting position, the left knee is brought up on a line between the opponent's inside shoulder blade and the middle line of his body.

There are two bad faults to watch for in the way of stance. First, see that the guard doesn't keep his extended leg on line with the rear leg. When the legs are kept on a line instead of at a comfortable angle, it becomes difficult to retract the advanced member whenever the opponent drives close and over it.

The other fault is leaning forward so that the rear leg straightens out. If the opponent drives toward the extended leg, the guard will have difficulty countering. He'll have to return to a balanced boxer's stance before pivoting his front leg back. That lost split-second will often give the driver that vital half-step advantage he needs.

The best way to move with a man is with a boxer's shuffle. This is a sliding, sort of hippity-hop action in which the feet are never crossed. As long as the guard can stay close and on-balance, the shuffle step is excellent.

But it isn't always feasible. In many situations where the opponent is driving hard to the basket or cutting to a good shooting spot, the smart guard will eschew the shuffle-slide and get to the critical point in the fastest manner possible. In crossing his legs, the guard should always maintain a position that prevents his man from suddenly changing direction or crossing over.

Proper positioning, distance-wise, goes hand in hand with the basic stance. Many guards play their men too closely, giving the opponent a rich opportunity to fake and drive by them. It's difficult to recommend a precise positioning. The ideal deployment is one in which the guard is as far back as possible to protect against the drive and yet close enough to stop or at least severely harass any attempted shot.

The positioning factor often depends on the respective skills of the guard and the opponent. If the opponent is faster, it may be wise to play him more loosely. If the opponent is slower, the guard may play a little tighter. As a rule, you'll want to tighten up on a deadly shooter and loosen up on a great driver. If the opponent can both shoot and drive, better call for Slater Martin!

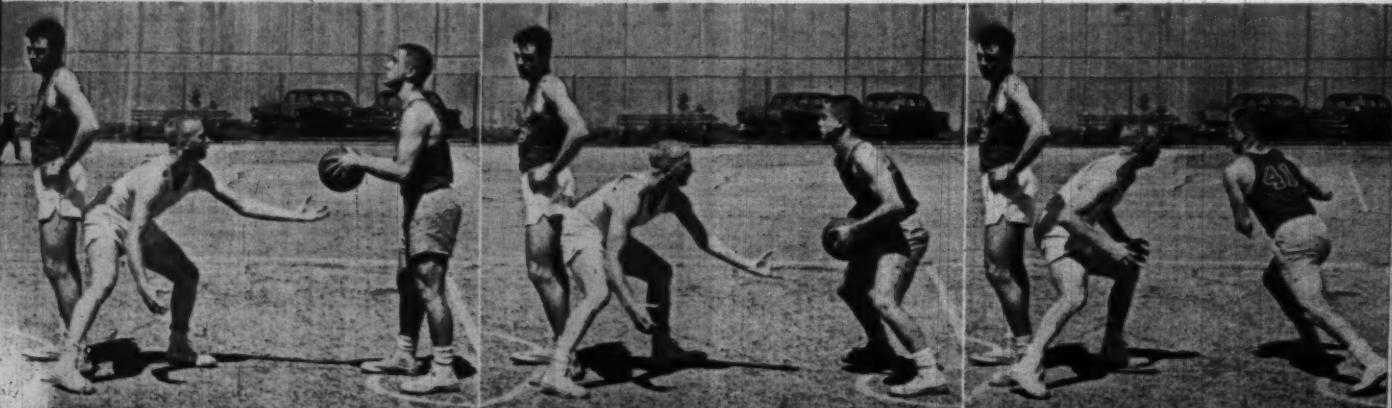
Whenever the opponent sets for a shot, the guard should close in by pushing off from the rear foot and taking short steps forward. This isn't an all-out charge. The guard should always keep his wits about him, being ready to retreat instantly if the shot proves to be a prelude to a drive.

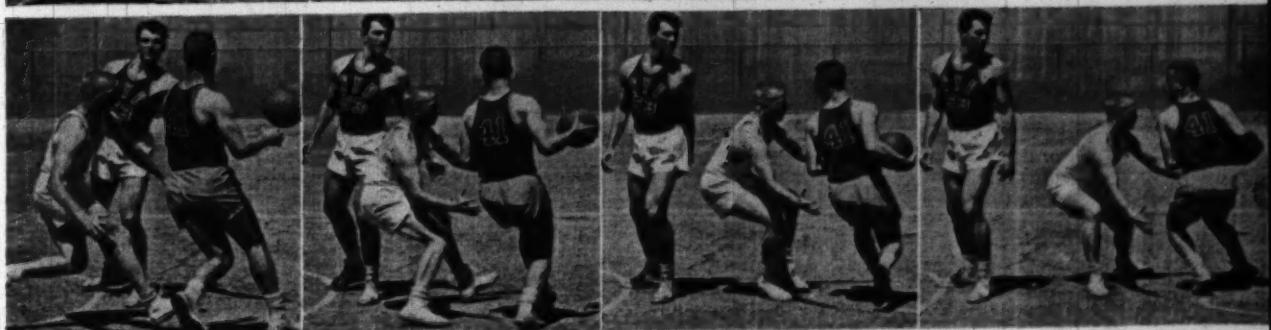
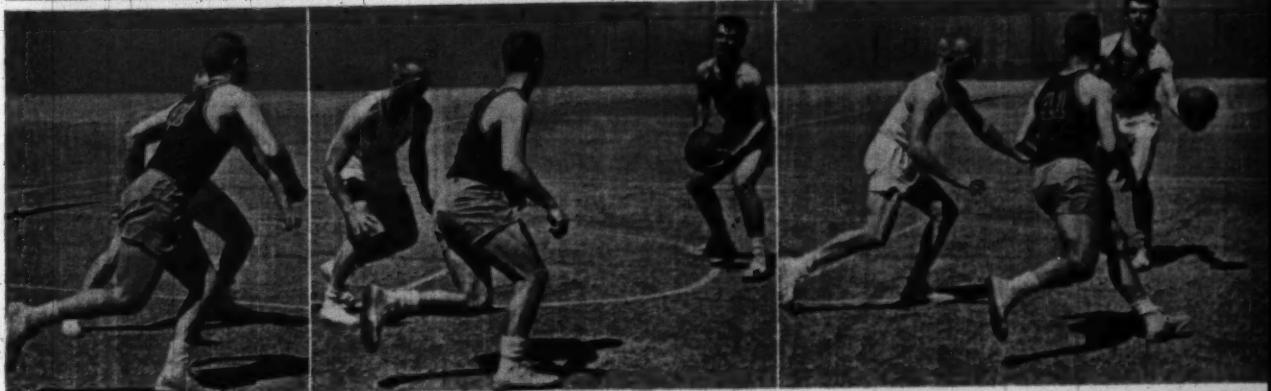
Should the opponent feint and/or drive, the guard should bring the near leg (the one closer to the driving side) back deep. We don't want a mere half-step withdrawal. A deep step back gives the guard position on the driver, preventing him from obtaining that all-important half-step advantage.

The exception to the rule occurs on a lateral fake. The guard responds to this move by moving the near foot laterally with the fake. A deep step would be dangerous here in that it would throw the guard off-balance for a drive down the opposite side.

For example: Suppose the opponent steps laterally to his right. If the guard responds by bringing the near (left) leg back deeply, the opponent can catch him off-balance by driving down the guard's right side—over the defensive man's extended (right) leg.

If the guard, however, responds by merely sliding his





### SLIDING THROUGH A SCREEN

The guard maintains a nice angle on the corner man. As the attacker moves up and over a high post, the guard sticks tight to him. He slides through the hole and assumes a good position on the attacker ready to pick him up no matter which way he may eventually drive.



### TAKING THE SHOOTER CUTTING OFF A SCREEN

We pick up the situation from above. The attacker sets to shoot, but is bothered by the guard's nicely positioned left hand. He then drives hard to his right. But that good defensive position pays off. It enables the guard to go right with the man, without being picked off.

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left leg laterally with the fake, he maintains his balanced position and is able to protect both sides.

Once the man starts dribbling, the guard shouldn't stand still and slap at the ball. If he misses, the man is gone. The guard should wait for the driver to commit himself. Once the opponent lets him know where he's going, the guard should close in and assume a good solid position.

When the driver gets within 22 to 20 feet of the basket, the guard should make sure the opponent can't cross over on him. That would put him in real trouble. The guard should force his man to the middle (where he can get help) or to the man's weak side, if he has one. The guard should keep his hands close enough to snap at the ball if the man crosses over.

During the early part of the season, I work a lot on mass drills on approaching, retreating, and side-stepping to develop body position and speed. I work on them every day, stressing the correct use of the hands. Then I coordinate the defensive work with offensive practice, so that both the offensive and defensive players are being taught in actual game situations.

After being thoroughly schooled in one-on-one defense, the players progress to two-on-two situations. This entails an intensive course on switching and sliding.

Most switches stem from lateral and vertical screens, particularly off a post. When a guard finds himself screened off from his man, a switch is mandatory and should be effected quickly—the post guard switching to the cutter and the other guard rolling into position behind the post.

The chief responsibility for the switch rests with the post guard. He should warn his oncoming teammate about the screen and then quickly decide whether the teammate can slide through. Meanwhile he edges over and up toward the exposed side.

If he decides that his teammate cannot slide through, he yells "Switch!" and picks up the free opponent.

Of course, the big danger in a switching game lies in the carelessness it may promote in individual defensive play. The coach must see that the boys never become lax on defense or develop a switch-consciousness which sees them switching at the slightest provocation.

The switch is a potent weapon only when discriminately employed (in the right situation) and properly applied (neither too soon nor too late).

Following are some of the salient points of individual defense in common situations:

1. Study your man carefully. The more you know about him, the better: Is he fast or slow? Is he shifty? Does he go both ways, or in just one direction? What are his favorite shots? What are his favorite stunts?

2. When your man is back around mid-court or in the corner without the ball, give him room—watching the ball out of the corner of one eye. Sluff

ONE of truly great young coaches in big-time college basketball, Lou Rossini has solidly established himself as a fundamentalist and tactician. In his first year at Columbia in 1950-51, he produced an unbeaten team. Upon moving to NYU two seasons ago, he took over a disorganized team and made it a big winner—going all the way to the NCAA quarter-finals last season. All his teams play solid basketball—fine defense and sound, smart, highly organized offense.

toward the middle in position to intercept a pass or help out a teammate.

3. When your man breaks into jump-shooting range, pressure him and beat him to the spot. Try to prevent him from getting the ball. That's the best defense there is against shooting.

4. Whenever it becomes impossible to follow both the man and the ball, forget the ball and concentrate on the man.

5. Never turn your head on a man, except when absolutely essential to catch up to him.

6. When your man shoots and then tries to follow up, don't turn your head to follow the ball. Stay in front of him (boxing him out), cutting off his direct path to the basket.

7. When playing two men under the basket, feint at the ball-handler to stop him, then drop back to the man underneath. The idea is to stave them off until help arrives or to force the shot from as far out as possible.

8. Don't slap at rebounds. You may hit the ball into an opponent's hands. Catch the ball and get it away as fast as you can.

9. Keep that hand up whenever your man looks as if he's going to shoot; put the pressure on every shooting attempt.

10. When covering the passer on an outside ball, don't square away on him, turning your back to the court. Assume an inside position, half-facing the passer and half-facing the court. This affords protection against screens and enables you to pick up loose men.

11. When picking up a man after a rapid change from offense to defense, point to the opponent and yell "I've got No. 20!" or something equivalent to it. Then stick to him until it becomes possible to switch to your own man. The opponents can thus be picked up with little confusion and no fatal oversights.

12. When forced to cover a much taller opponent after a switch, switch back to your own man at the first opportunity.

13. Don't be afraid to use your lungs. Keep talking it up, pointing out loose men and warning teammates of screens.

14. Never relax on defense. If you need a breather, wait until your team is changing from defense to offense.

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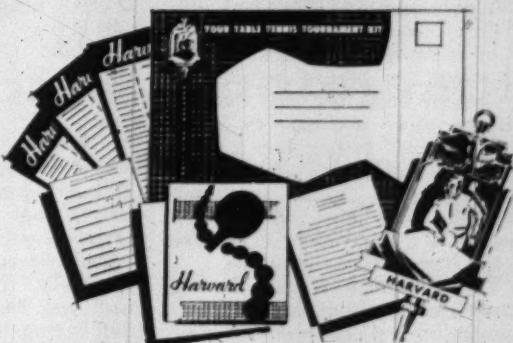
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## Box-and-1

## Running Zone

A ZONE which has come into great popular favor the past few years is the box-and-1, which has one man playing the opposing star man-to-man and the other four defensive men playing zone. With its combination of zone and man-to-man defense, it has proven extremely disconcerting to attacking rivals.

As with all defenses, correct execution is of primary importance. It's not enough simply to assign your best defensive player to the opponents' top scorer, and then to tell the rest of the team to go out and play a four-man zone.

We've had excellent success with this defense at Hartwick, and I feel we've come up with some new ideas for its successful execution.

In outlining our box-and-1, I'd like to emphasize several points which it will pay you to remember as you go along:

1. The box-and-1 is a sliding zone of movement. In fact, movement sometimes occurs so quickly and over so large an area that it would be more accurate to label this a "running" rather than a sliding zone.

2. Anticipation is of premium value. The big men (forwards) especially must be taught to anticipate the direction of the attack.

3. The structural weaknesses of this zone are out front, on the sides, and in the bucket. These aren't concurrent weaknesses, but evolve singly with the movement of the ball.

Generally, these weaknesses can be overcome by fast overshifting. If the opposition can maintain a cool passing game against this running zone, they'll eventually open an area for good percentage shooting. But we contend that this type

of offensive game isn't possible against our running defense.

4. The defensive player who's guarding the opponents' top scorer must hold him to an absolute minimum of points. The final value of the box-and-1 rests on the accomplishment of this goal.

When we assign a man to the opposing star, we first analyze the type of threat the latter represents. Is he a deadly shooter? Does he drive well? Does he set up plays? Will he normally get the majority of his points shooting from the field or by rebounding?

We must know this before the game to decide whether to play between the man and the ball or between the man and the basket.

We'll play between the opposing star and the ball if:

1. He's fast, an excellent shooter, and can also drive well.

2. He's primarily a playmaker.

We'll play between the opposing player and the basket if:

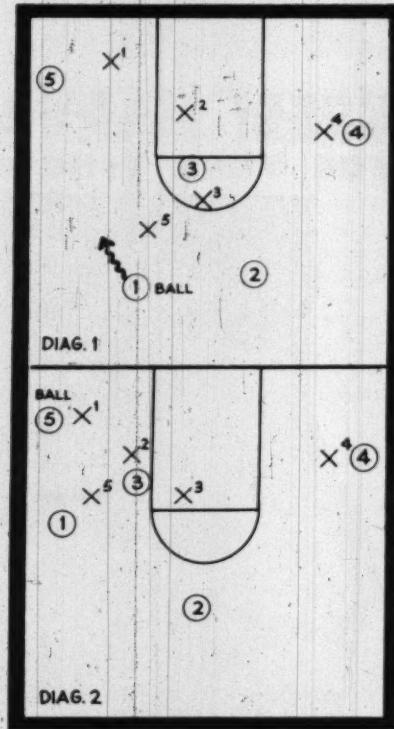
1. He's a strong rebounder who crashes from the corner or out front.

2. He cannot drive well and isn't particularly fast and shifty.

The sole concern of the defensive man is that single opponent. He doesn't slough off and help teammates. Neither does he scramble for loose balls. His job is to keep this top player from shooting, and even from seeing the ball.

In playing our four-man zone, we feel that it isn't enough to stick four men on the court and tell them to play a tight zone. Our men realize the weaknesses of the four-man zone and know that fast shifting must be utilized to overcome them.

Although we spend much practice time on sliding, we've found this technique a trifle slow in some



of the zone movement. So we allow our men to run whenever necessary, stopping short of the man with the ball, and approaching with the attack step.

Needless to say, this is risky. But we feel that the constant movement of the zone, plus the eagerness of the men to make it work, provides adequate compensation. I certainly don't recommend running as a constant technique. Many coaches may be fortunate enough to obtain the desired result by sliding. But we haven't been able to do this. So we use running to get the job done.

The diagrams show the shifts of the zone in various spots on the court. You'll notice that it tends to overshift. With the ball on the side or in the corner, all four men are brought over to that side of the court. This is especially true when the opponent is working with the ball away from its top scorer (No. 4).

A great deal of the zone's success rests on the speed and defensive ability of the big men, or forwards. These men must be able to move swiftly into the bucket or to the corners. Most important, they must be able to anticipate their future assignment before the next pass is attempted.

For example, in Diagram 1 we find 1 dribbling toward the left, looking for a pass in to 5. X-1 anticipates this pass and moves closer to the side so that he may cover 5 in case the pass is made. X-2 moves to the

(Concluded on page 35)

By R. J. SONSTROEM, Coach, Hartwick College, Oneonta, N. Y.



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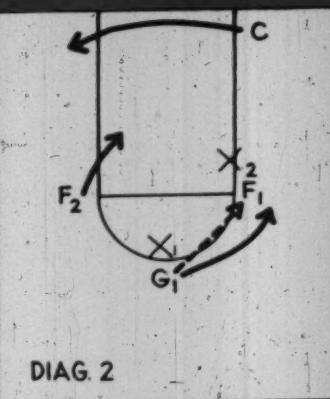
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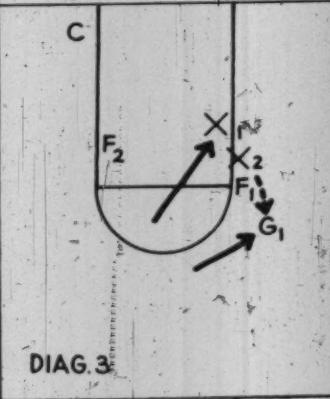
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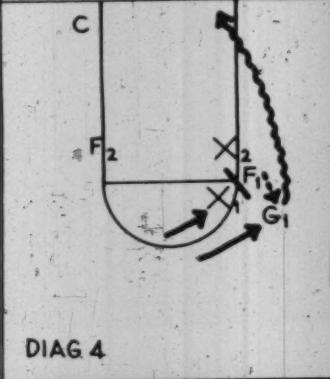
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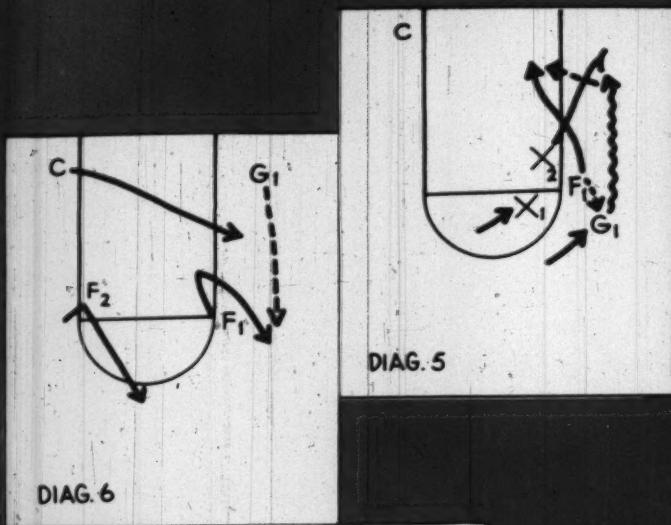
DIAG. 2



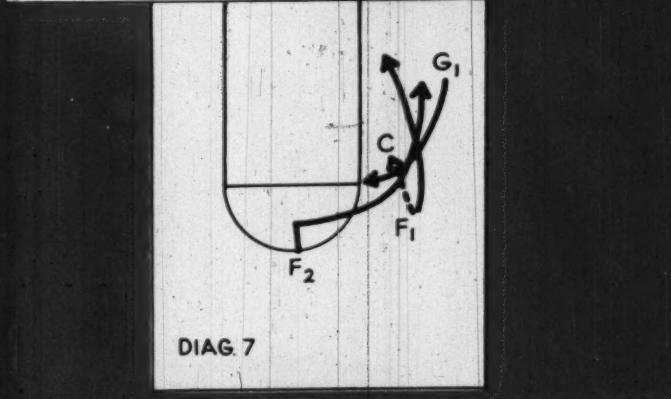
DIAG. 3



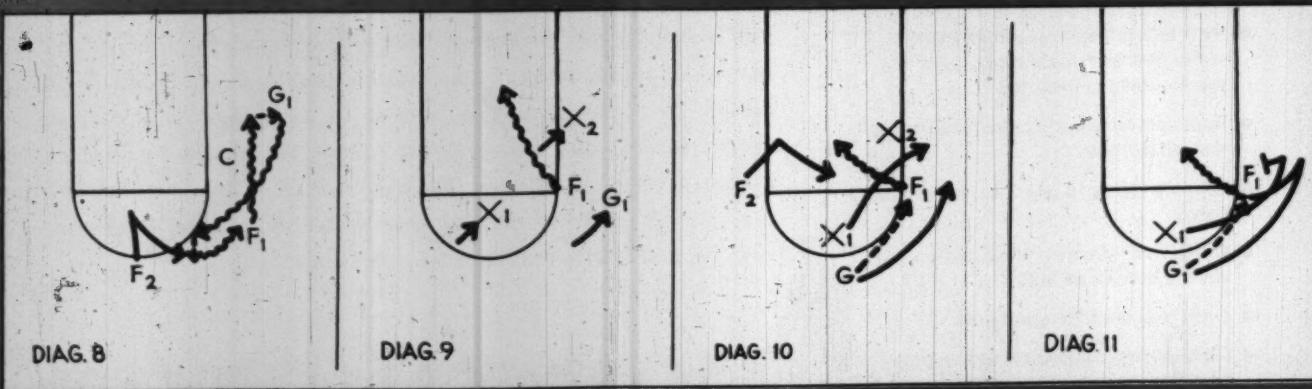
DIAG. 4



DIAG. 5



DIAG. 7



DIAG. 8

DIAG. 9

DIAG. 10

DIAG. 11

# An "Angles" Pattern

## That Keys on the Defense

**T**HE ultimate objective of a basketball pattern is to develop the good percentage shot against any type of defensive maneuver. The angles offense has done just that as a basic pattern for the late Blair Gullion's Washington U. teams on the college level, and for the University City teams on the high school level for the past five years.

The basic formation (Diag. 1) is composed of three players—the two forwards outside the circle at the free-throw line and either guard at the head of the circle. The center may start out on either side of the basket, and the other guard on either side of the court.

When G-1 reaches the head of the circle with the ball (Diag. 2)—this spot must be reached to insure a proper cutting angle—both forwards break up to their designated places to meet a rolling pass.

After passing, G-1 cuts hard, outside and close to the forward who has received the ball. C always moves to the side of the basket away from the ball, while F-2 takes a check-step toward the basket.

At this point, and for the rest of the pattern, the path of the defen-

sive man will determine just what the offense does. If X-1 goes behind the "pile" (Diag. 3), G-1 stops and takes a short flip pass from F-1 for a 16-foot shot.

If X-1 is screened by F-1 (Diag. 4), the latter gives the ball back to G-1 who drives in for the lay-up.

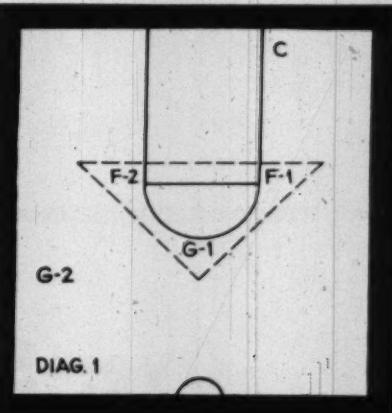
If X-2 makes a late shift on the driving G-1 (Diag. 5), F may roll into the basket for a return pass from G-1.

If G-1 is stopped at the baseline (Diag. 6), he should pivot and pass out to F-1.

F-1 may hit C (Diag. 7) for a pivot shot or an F-1, G-1, and F-2 scissor play in that order. Or F-1 may start a three-man weave with F-2 and G-1 (Diag. 8), looking for the drive-in or pass into C at any time.

Returning to the start of the pattern, if X-2 is making a rather early shift to head off G-1 (Diag. 9) while F still has the ball, F-1 makes a quick spin-dribble toward the basket for a lay-up or short hook shot inside of X-1, who's unable to make the quick shift.

If X-1 takes the normal defensive path (Diag. 10), X-2 must loosen



up to let X-1 through. This gives F-1 room to spin inside, penetrating the free-throw line, and taking the option to shoot or screen and pass off to F-2, who has come back from his check-step. F-2 may drive around F-1 for the lay-up or stop at the free-throw line for the shot, depending on the defensive play.

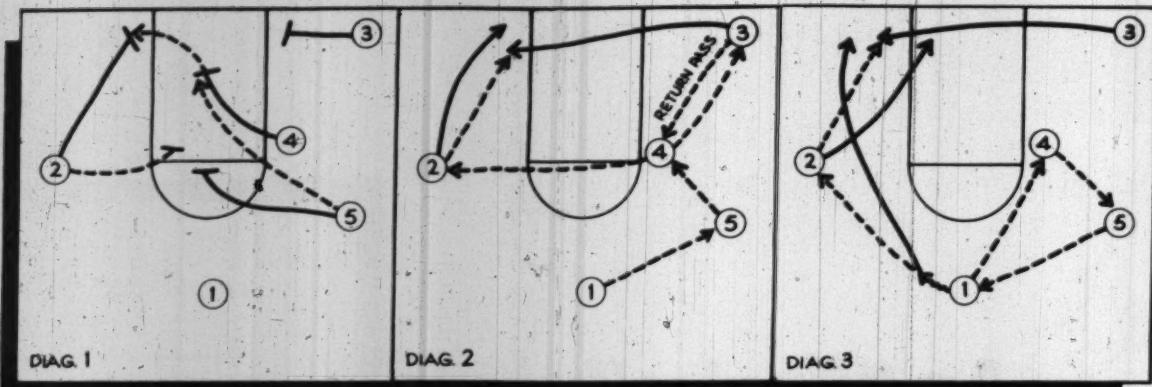
If X-1 is pressing G-1 and tries to move in front of F-1, G-1 can "mouse-trap" X-1 (Diag. 11). That is, give X-1 space in front of F-1, but then come back in the opposite direction to pick him on F-1.

This angle offense with its many options is almost a complete offense in itself. The defense actually keys on the offensive pattern. Therefore, the players must be able to think and know exactly how the defense is playing.

Once mastered, this offense combines the best points of strict pattern and free-lance play. Each boy knows where his teammate will be under any circumstance, yet each can and should vary his play and choice of movement to take advantage of the defense.

We feel certain this offense can pay dividends for you.

By DICK GREENBLATT, Asst. Coach, University City (Mo.) H. S.



## Over-Shifting Against the Zone

FOR several years we studied and experimented with ways of attacking the zone defense. We tried many versions of over-loading before we accidentally hit upon the solution—an "overshift" offense that was equally effective against all types of zones.

The emphases in this offense are on the following:

1. Placing the players according to the needs of the system.
2. The need for players to move both the ball and themselves.
3. The need for cutting through the zone whenever the opportunity arises, or passing inside to the big men.
4. Rebounding balance when a shot is taken.

Let's take up these points in order:

**Offensive Needs of the System:** The players are positioned as shown in Diag. 1. Ideally, the players should have the following qualifications, though we realize it isn't always possible to find the exact type for each spot. We just do the best we can.

No. 1 is the team's best ballhandler. He's the playmaker and should be a good outside shooter.

No. 2 is our best shooter-rebounder. Since he has important rebounding responsibilities on shots from the other side of the court, he

should be a strong rebounder. It's imperative that he be able to move without the ball as well as with it in order to get free for passes to his side of the court.

No. 3 roams the base line, staying inside all the time. Above all else he must be a strong rebounder. He should also possess a good jump shot from a radius of 15 feet.

No. 4 is usually the pivot man or center. His primary responsibility is to rebound. This man, along with No. 1, has the important responsibility of switching the ball quickly from the overshifted side to the No. 2 man.

No. 5's duties are very similar to those of No. 1, except that he usually works only the "overshift" side, whereas the No. 1 man works both sides.

**Moving Both the Ball and Themselves:** Usually we try to move the ball on the "overshift" side first. When we have the defense preoccupied on this side, the ball is quickly shifted to the weakside by either 1 or 4 (Diag. 2).

At this point, we feel the defense must react in the direction of the ball too fast to (1) be strong against 2 driving at the basket, (2) adequately defend 3, 4, and 5 moving for rebounding position or the openings for a pass from 2.

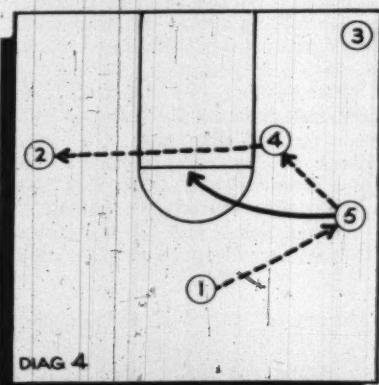
While the ball is being moved

with quick, short passes on the "overshift" side, 3 is roaming the base line (Diag. 3). This enables him to get good inside position on shots and to serve as pivot man to feed 2 and 1 cutting by. Obviously he's in good position to take a shot himself.

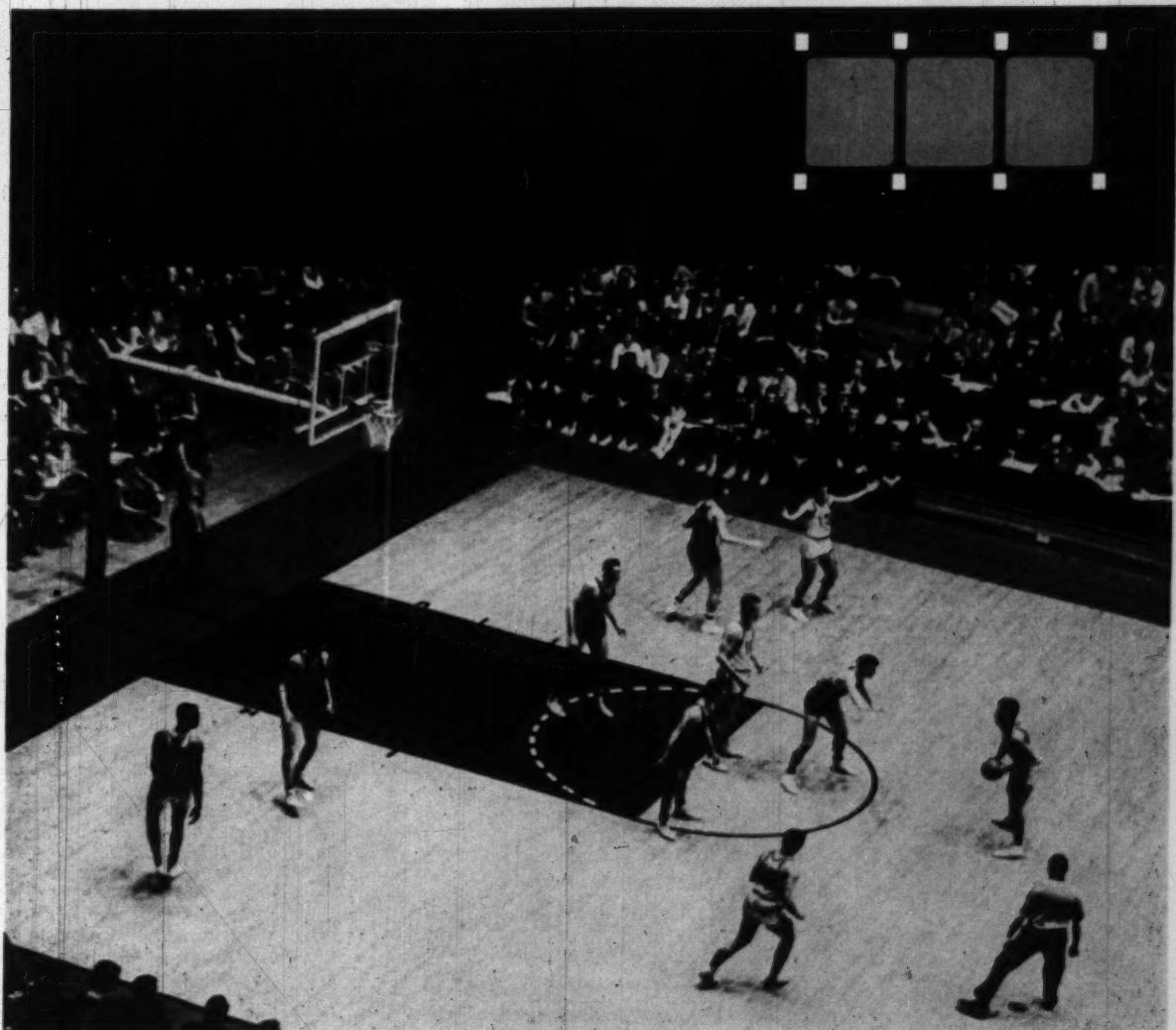
No. 5 is in excellent position to break toward the ball and still be inside when 2 has the ball (Diag. 4).

**Cutting Through the Zone:** Theoretically, zone defenses discourage cutting by jamming the center. However, the "overshift" offense forces the zone to cover more territory than it would like to, thereby opening lanes for cutters (Diags. 3, 5).

Since 2 is away from the "overshift," the zone defense is often forced to take him man-to-man and employ a four-man defense for the other side of the court. This not only opens up the inside lanes but tends to weaken the solidarity of the zone.



By JOE H. GILLIAM, Coach, Berea High School, Danville, Ky.



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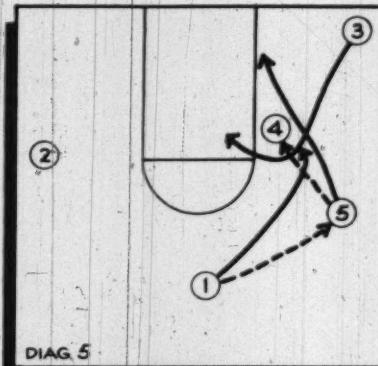
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In Diag. 3, the ball is first moved on the "overshift" side. Quickly and without telegraphing, 1 passes to 2. Simultaneously, 3 moves to that side, establishing a low pivot for a quick pass from 2.

From this point, 2 and 1 split the pivot, with 1 using 2 as a moving screen.

Diag. 5: 3 and 5 men split the pivot, with 3 using 5 as a moving screen. The third cutter, 1, uses 3 as a moving screen. Not to be overlooked is the fact that, while cutting, 3 and 5 are moving into better rebounding position if the third cutter (1) becomes the shooter.

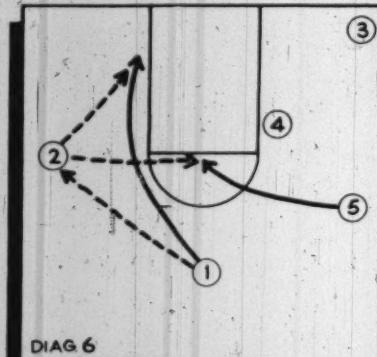
Diag. 6: Assuming that the ball has first been moved on the "overshift" side and then quickly passed to 2, the defense must move fast with the shift of the ball. When this happens, 1 is in excellent position to slice through the zone and 5, who's moving inside to the foul line area to receive a pass and take a jump shot.



DIAG. 5

tions, with the other moving to the foul line area. This naturally means that 3 and 4 are always moving into this all-important rebounding area.

No. 1 is responsible for the back position except when cutting, at which time 5 or occasionally 2 takes his position.



DIAG. 6

## TRACK RULES CHANGES

MAJOR changes in the National Alliance Track and Field rules for 1960-1961 include:

Rule 2-3 provides that record applications in the 100, 220, hurdles, and broad jump must include the anemometer reading during the event. Two anemometers are required for races involving one curve.

Rule 3-9 has been revised by deleting the term "Chief Judge" and referring to him only as "Head Judge."

Rule 8-2 is expanded to provide "in events around one or two turns and run in lanes, heat winners may be allowed to draw for select lanes, as determined by the Games Committee."

Rule 8-4 is revised to clearly provide that in relay races, both runners and baton must be within the exchange zone during the entire exchange. The incoming runner is considered to be outside the exchange zone until he touches the ground inside the zone; and the outgoing runner is considered to be inside the zone until he touches the ground outside the zone.

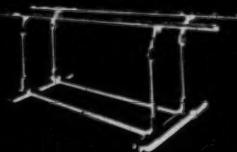
Rule 8-4 is expanded to specify that the baton shall be uniform in circumference with no corrugations nor built-up ridges.

Rule 9-2 now makes it clear that in the pole vault, it will be counted as an unsuccessful trial when the contestant clears the bar and his pole falls forward and rests against the bar or the upright standard. The pole must be released to fall away from the bar and landing pit.

Rule 9-6 provides that discuses with a thickness of .4375 inch, at a distance of .24 inch from the outside edge will also be legal if they meet the other required specifications.

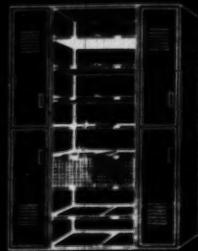
Track Situation 37S recommends that the first 440 in the 880 relay be run in lanes with the third runner being permitted to "cut" for the pole.

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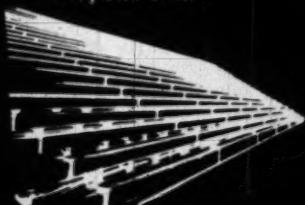
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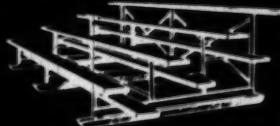
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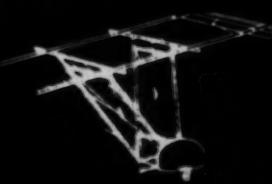
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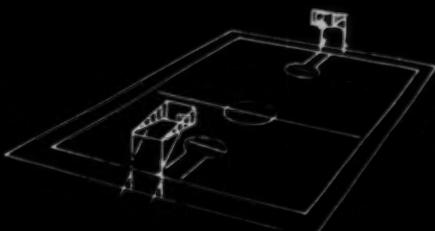
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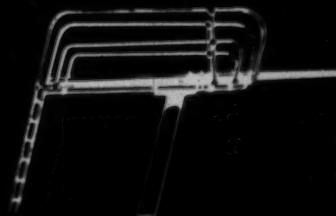
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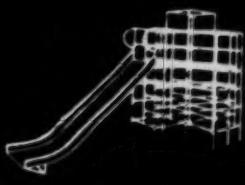
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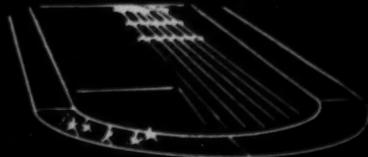
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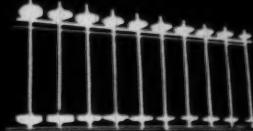
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# Effect of Eating at Various Times Upon Sprinting Performance

CUSTOMARILY, athletes have abstained from eating for three or four hours and sometimes as many as five or six hours before performing in competition. These intervals have been arbitrarily selected in order to allow ample time for the food to be evacuated from the stomach, so as to prevent supposedly conflicting demands on the circulation during the activity.

Regardless of physical condition, those who indulge in strenuous exercise should consider not only the content of the meal but also the time element between eating and the exercise. It has often been observed that when athletes have ingested a heavy meal shortly before a strenuous effort, undesirable symptoms such as cramps, nausea, and vomiting have been experienced.

It appears that if one should eat a large meal—especially if it contains a large amount of fat—a circulatory conflict might arise that might prevent the demands for blood by the active muscles and digestive system from being adequately met simultaneously.

Stresses might also appear due to emotional situations that develop as a result of the competition. These stresses could hinder not only the digestion of food, but the movements of the gastro-intestinal tract.

However, it seems logical to assume that if one could provide a sprinter with an easily digestible meal—small in content and quickly digested—that would provide quick and lasting energy, some benefits might be derived without undesirable reactions. In order to throw some light on this question, an experiment was devised, the results of which are herein reported.<sup>1</sup>

<sup>1</sup>This research was generously supported by a grant from The Cereal Institute, Inc., Chicago, Illinois.

**Subjects.** 15 male undergraduate students at the State University of Iowa, ranging in age from 17 to 24, were selected as subjects. All had been performing physical activity in the required physical-education classes for four weeks before the start of the study; and all were assessed as being in good physical condition, although no attempt was made to select them from this standpoint.

**Design of the Experiment.** In order to show what effect a small meal, which provides quick and lasting energy and is eaten at various intervals from  $\frac{1}{2}$  to 3 hours before sprinting 50 yds. and 100 yds., has on starting and sprinting times, data for each time interval were collected and recorded for each of the performance factors.

These data were analyzed and compared to determine if the food and eating interval affected the performances. Six time intervals between eating the small meal and sprinting were selected. They were  $\frac{1}{2}$  hour, 1 hour,  $1\frac{1}{2}$  hours, 2 hours,  $2\frac{1}{2}$  hours, and 3 hours.

**Apparatus.** An electrical timing device was arranged to measure the starting time and the sprinting times for the 50- and 100-yd. dashes. The arrangement of the apparatus was as follows.

A "scotch gun"<sup>2</sup> consisting of two boards hinged at one end and with an attached handle was used to produce the starting signal.

Two electrical contacts were so arranged in the "scotch gun" that when the boards were snapped together to produce the starting signal, two chronoscopes, A and B, were started.

An electrical contact was placed in the face of one of the starting

<sup>2</sup>Geo. T. Bresnahan, W. W. Tuttle and Francis X. Cretzmeyer, *Track and Field Athletics* (5th ed.), St. Louis: C. V. Mosby Co., 1960.

blocks, so that when the sprinter left his mark, chronoscope A was stopped and a third chronoscope, C, was started.

The time elapsing between the starting signal and the sprinter leaving his mark was recorded in hundredths of a second on chronoscope A.

In order to measure sprinting time for 50 yds., a photo electric cell was placed at the 50 yd. mark. When the sprinter crossed the 50 yd. line, the photo electric cell was activated and chronoscope C was stopped, thus measuring in hundredths of a second the sprinting time for 50 yds.

Chronoscope B was connected to a photo electric cell located at the 100 yd. mark. When the sprinter crossed this line, the photo electric cell was activated and chronoscope B was stopped.

Thus, by subtracting the starting time from the time recorded by chronoscope B, sprinting time in hundredths of a second for 100 yds. was obtained. This arrangement provided for measuring starting time, sprinting time for 50 yds., and sprinting time for 100 yds.

**The Meal.** A meal of the same content was eaten by all subjects at the same time each testing day. Following the meal and at one of the six different time intervals, the subjects performed the sprinting event.

The content of the meal is shown in the table on page 26. The idea was to provide a light meal which could be easily digested and which provided quick and lasting energy in the form of protein and carbohydrates. The time interval between eating and sprinting was rotated so that no regular sequence was followed.

**Collection of Data.** The data were collected five days a week for 12 weeks. A 100-yd. straightaway located in the Field House was utilized for the sprinting. The subjects performed a warmup routine of alternate running and jogging together with practice starts before sprinting the dashes.

Upon completing the warmup and at the appropriate time interval for the particular testing day, the subject took his position on the

By EDWIN YOUNMANS, LOUIS E. ALLEY, and W. W. TUTTLE  
Department of Physical Education, University of Iowa



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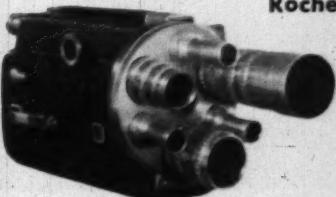
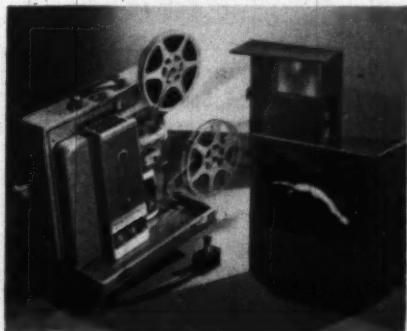
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### FOOD CONTENT OF THE MEAL EATEN BEFORE SPRINTING

Food Items	Weight of Serving (gm.)	Protein (gm.)	Carbohydrates (gm.)	Fat (gm.)	Calories
Cereal	30	3.3	22.0	0.5	110
Toast (2 slices)	50	4.2	11.9	0.7	130
Butter	8	0.09		6.5	70
Sugar	8		8.0		32
Milk (non-fat)	240	14.9	12.5	0.2	165
Total	336	22.49	54.4	7.9	507

starting blocks at the starting line. The pistol firer followed the accepted techniques for starting sprinters, except that the "scotch gun" was employed.

After completing the 100-yd. dash, the starting time, the 50-yd. sprinting time, and the total elapsed time for sprinting 100 yds. were read from the appropriate chronometer and recorded. The sprinting time for the 100-yd. dash was then computed by subtracting the starting time from the total elapsed time, and this 100-yd. sprinting time was also recorded.

The subjects sprinted the 50-yd. and 100-yd. distances once each testing day on 10 different testing days. Thus, each subject ran the distances 10 times for each of the six different meal spacings. The total number of sprints for each subject was 60.

**Reliability of Data.** The chronometer used has an accuracy of  $\pm 5$  milliseconds per operation. The formula for intraclass correlation<sup>3</sup> based on the analysis of variance was employed to determine the reliability of the means that were used for computing the *F* ratios for the  $\frac{1}{2}$  hour time interval.

An intraclass correlation *r* of .84 was obtained for the means of the starting times; *r* of .92 for the means of the 50-yd. sprinting times; and an *r* of .97 for the means of the 100-yd. sprinting times.

The data and the means for the other five time intervals were found to be similar to the data and the means for the  $\frac{1}{2}$  hour interval. Hence, the reliability of the mean for each of the other five time intervals wasn't computed.

**Analysis of Data.** A summary of the data for starting times, 50-yd. sprinting times, and 100-yd. sprinting times is presented in the second table. These data are based on the mean of the means of the 10 performances by each of the 15 subjects for each of the six different time intervals.

<sup>3</sup>R. L. Ebel, "Estimation of the Reliability of Ratings," *Psychometrika*, December, 1951, pp. 156-71.

<sup>4</sup>E. F. Lindquist, *Design and Analysis of Experiments in Psychology and Education*, New York: Houghton Mifflin Co., pp. 158-71.

An analysis of the data shown in the table was made to determine whether or not any of the six different time intervals between eating a 500 calorie meal (which provides quick and lasting energy) and sprinting has any significant effect on starting time, 50-yd. sprinting time, and 100-yd. sprinting time. This was done by the statistical procedure known as the analysis of variance; treatments by subjects design.<sup>4</sup> This method results in an *F* ratio.

Three separate analyses were made, one for starting times, one for 50-yd. sprinting times, and one for 100-yd. sprinting times. Since the *F* ratio in each of the analyses was less than 1.2, there are no significant differences among any of the experimental situations. (In this situation an *F* ratio of 3.29 or greater would be required to be statistically significant at the .01 level.)

**Summary and Conclusions.** Data were collected from 15 male subjects relative to what effect a 500 calorie meal which provided quick and lasting energy and was eaten at six different time intervals ( $\frac{1}{2}$  hr. to 3 hr.) before starting and sprinting would have on (1) starting time, (2) sprinting time for the 50-yd. dash, and (3) sprinting time for the 100-yd. dash.

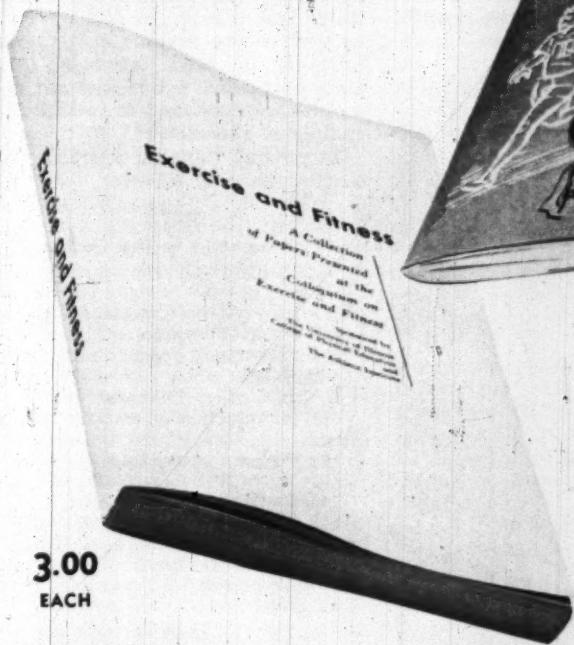
On the basis of the data collected, this meal—regardless of the time interval between eating and sprinting—had no statistically significant adverse effects on starting times and sprinting times for 50- and 100-yd. dashes. None of the subjects experienced reactions characteristic of "athletes sickness."

### Mean of Means of the Starting Times and Sprinting Times for Six Meal-Time Intervals

Meal Intervals	Starting Times	50-yd. Times	100-yd. Times
$\frac{1}{2}$ hr.	0.46	6.64	12.69
1 hr.	0.46	6.69	12.72
$1\frac{1}{2}$ hr.	0.45	6.63	12.67
2 hr.	0.46	6.64	12.68
$2\frac{1}{2}$ hr.	0.45	6.63	12.66
3 hr.	0.45	6.63	12.66

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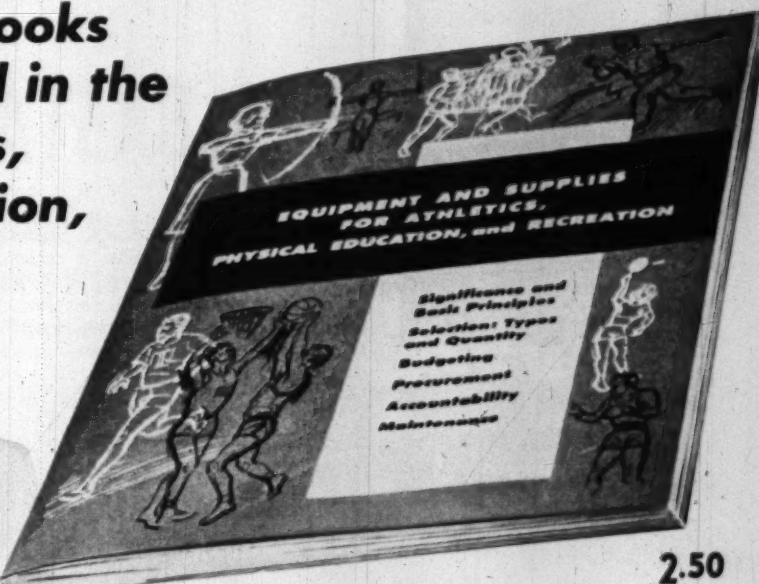
Eminent authorities in the fields of physical education, physiology, nutrition, medicine, and psychology met at the Colloquium on Exercise and Fitness, sponsored by the University of Illinois College of Physical Education and the Athletic Institute, for the purpose of correlating research from several fields on the effects of training on the human organism. The result is this new, 248 page book—EXERCISE AND FITNESS—a landmark in the search for means of preventing or retarding the physical deterioration that has accompanied man's 20th Century retreat from manual labor.

EXERCISE AND FITNESS is a compilation of twenty papers, along with summary, which were presented to the distinguished members of the Colloquium. Included in the work are such titles as "Exercise and Heart Disease—Related Fields for Research," "Exercise, Fitness, and Aging," "Some Psychological Correlates of Physical Fitness and Physique," and "Exercise, Fitness and Weight Control." Essentially the book reviews the effects of exercise on fitness, with a focus on humans, adults, and hygiene, rather than, but not excluding, animals, children, and therapy. It includes both basic and applied research presentations.

Students, researchers, physical educators, doctors, and others will find this text of singular importance.



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The result of the workshop is this 104 page book containing chapters on the following: "Significance and Basic Principles," "Selection: Types and Quantity," "Budgeting," "Procurement," "Accountability," and "Maintenance." The material in the manual is based on the reports developed by the Workshop discussion groups. Helpful references and sources of additional information and material are included. Pictures, graphs, charts, have been used to illustrate particular features. The basic purpose of this manual is to facilitate the purchase and use of equipment and supplies in such a manner as to achieve maximum participation, and assure the fullest benefits from programs of athletics, physical education, and recreation.

This manual is designed for use as a textbook for such courses as "Organization and Administration," and "Planning of Facilities and Equipment." It is a valuable reference source for courses dealing in various aspects of sports and athletics. It should be included in the professional library of school administrators; administrators and teachers of athletics, physical education, and recreation; coaches; planning consultants; purchasing agents; manufacturers of equipment and supplies; and others in need of practical information concerning these areas.

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# Aquatic Skills

In RECENT YEARS the aquatic fever has spread like a plague throughout the country. This has been especially noticeable in Southern California, where the natural facilities and temperate weather are conducive to water sport all year round.

With so many sports lovers infected by the water-itch, we at Los Angeles Pacific College felt that an opportunity should be provided for the mastery of the various aquatic skills. And time has proved us right. Our course, possibly the most extensive aquatic course offered on the college level, has been received most enthusiastically by our students.

The first question we considered was the scope of the curriculum. The students helped by suggesting activities and skills which they wanted to learn. These were sorted and categorized into teaching units, then organized in logical sequence so that each section served as a building block for the next.

The 10 teaching units are as follows: Introduction to the Course, Swimming Strokes and Skills, Life Saving and Water Safety, Skin Diving, Body Surfing, Board Surfing, Boating, Waterskiing, review, and testing.

It's up to the physical education department to determine what calibre of student should be allowed to enroll in the aquatic skills course. At this time we feel that every prospective student should be required to pass portions of the junior life saving test. This gives us a reasonably adequate student to work with from the outset; and it also stimulates the less qualified student to work harder in his regular physical ed swimming class in order to become eligible for the aquatic class.

Of course, it's possible to incorporate the aquatic skills course directly into the regular physical ed class. But we've found that the poor swimmers will usually retard the normal class progress. Also, permitting a poor swimmer to participate in such activities as skin diving and surfing exposes you to libel suits and embarrassment.

After testing the student to determine his general swimming ability, we orient the class on the nature and disposition of the course. Rules and regulations are covered, as well as the grading system and schedule of class meetings. Any class particulars are ironed out and a quick question-and-answer period completes the session.

In general, the basic teaching unit outline reads as follows:

#### UNIT I

##### *Introduction to the Course*

A. Pre-class Qualifying Test (30 min.)

- (1) Stay afloat 10 minutes
- (2) Swim 200 yards in 5 minutes
- (3) Dive and swim under water for 20 yards

B. Orientation (30 min.)

- (1) Introduction of teacher and students
- (2) Purpose of course
- (3) Skills to be learned
- (4) Grading system
- (5) Schedule of class meetings
- (6) Class rules and regulations
- (7) Safety factors

C. Question-and-Answer Session (no time limit)

#### UNIT II

##### *Swimming Strokes and Skills*

We felt that it was logical to have our second unit cover the basic swimming strokes, since the remaining units were largely dependent upon the student's ability to swim well. The teaching unit was organized as follows:

A. Orientation (30 min.)

- (1) Safety factors
- (2) Terminology
- (3) Demonstration of strokes
- B. Floating (15 min.)
- (1) Back
- (2) Deadman
- (3) Bobbing

C. Sculling (15 min.)

D. Elementary Back Stroke (30 min.)

E. Front Crawl (30 min.)

- (1) Flutter kick
- (2) Trudgen kick
- (3) Water ballet
- F. Back Crawl (30 min.)
- (1) Flutter kick
- (2) Trudgen
- G. Breast Stroke (30 min.)
- (1) Elementary
- (2) Water ballet
- H. Inverted Breast Stroke (30 min.)
- I. Butterfly (30 min.)

# Course

- J. Underwater Swimming (30 min.)
- K. Side Stroke (30 min.)
  - (1) Scissors
  - (2) Inverted scissors
  - (3) Overhead stroke
- L. Turns (30 min.)
  - (1) Rail turn
  - (2) Flip turn
- M. Surface Dive (30 min.)
- N. Racing Dive (30 min.)
- O. Review (30 min.)
- P. Test (30 min.)

## UNIT III

### *Life Saving and Water Safety*

Our next unit covers the techniques used in life saving and water safety. This course was not designed to qualify the student for the senior life saving certificate, but rather to prepare him for any emergencies that might arise during the course. However, with some course modifications, we could satisfy the Red Cross life saving requirements.

- A. Orientation (60 min.)
- B. Artificial Respiration (60 min.)
  - (1) Holger-Nielsen method
  - (2) Mouth-to-mouth
  - (3) Change-overs
- C. Approaches (60 min.)
  - (1) Rough water
  - (2) Dives
  - (3) Underwater techniques
- D. Carries (60 min.)
  - (1) Fireman
  - (2) Side stroke
  - (3) Back stroke
  - (4) Tired swimmer
  - (5) Buoy and apparatus
- E. Breaks (60 min.)
  - (1) Parry
  - (2) Block
  - (3) Front strangle
  - (4) Back strangle
  - (5) Double drowning
- F. Water Survival (60 min.)
  - (1) Overboard
  - (2) Overturned craft
  - (3) Fire hazard
- G. Review (60 min.)
- H. Test (60 min.)

## UNIT IV

### *Skin Diving*

We found it to our advantage to present this unit in a swimming pool or shallow cove. Due to the safety factor involved we felt that the students should not be permitted to use unfamiliar surroundings for their beginning efforts. The basic teaching unit plan was organized in the following manner:

- A. Orientation (60 min.)
- B. Free Swimming (60 min.)

(Continued on page 52)

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# Influencing the Backcourt Attacker

*A Symposium Featuring the Theories  
of 15 Famous College Coaches*

## **QUESTION:** "How do you influence an offensive man in in the backcourt? Do you try to force him to the outside or down the middle?"

Not too many years ago, there was a unanimity of opinion on how to defend the offensive backcourt man. Coaches agreed that he should be forced to the outside and thus compelled to take the long route to the basket. In recent years, however, a new school of thought has evolved. Many mentors now believe that the attacker should not be forced to the outside. If he can beat the man taking him, they reason, he can go all the way in—since the defense won't be

in good position to help out on him. For this reason, they try to force the backcourt man down the middle, where the defense is strongest and thus in better position to pick him up. The pros and cons of the question are batted around wherever coaches congregate. To compile a cross-section of expert opinion on this poser, *Scholastic Coach* has solicited 15 of the greatest college coaches in America . . . and here are their absorbing replies.

**BEN CARNEVALE, Navy:** We allow the defensive man to take a comfortable stance with either foot forward or both feet parallel—just as long as he can make his defensive move. The hands are kept waist high, neither one up or down but used in boxer fashion—jabbing and flicking at the defensive man. Our scouting reports determine whether we'll force the offense outside or into the middle. This move will vary with our opponent. In other words, we'll do both. However, we try to force the offensive into its weakest move. By varying our defensive moves, we can keep the offense off-balance.

**JOEL EAVES, Auburn:** We try to play the outside shoulder of the man with the ball, and sink off the side away from the ball. The feet are only slightly staggered, and we don't care which is ahead. The arms are kept down until the man with the ball stops and faces the basket, where he can shoot. Then the arm on the same side of the advanced foot is raised.

**JOHN KUNDLA, Minnesota:** I'm a firm believer in making the defensive man force the opposing backcourt man to the outside. We hope he passes down the middle, so we can intercept him. Also, if we get him in the corner, we can pinch him and force him to throw a bad pass. Our stance is low. If the left foot is ahead, the left hand is up. If the right foot is slightly ahead, the right hand is up.

**FRANK J. MCGUIRE, North Carolina:** Our man-to-man support theory is based on forcing the backcourt offensive player to either dribble or pass to the sideline. Unless we force him to the sideline, we're unable to successfully set up our weak-side men in support positions. This action also aids our pivot defense. It lets our pivot defense know where the ball will be, and thus helps it set up on the ball side.

If the backcourt man were permitted to go to the middle, he could then pass to either side. Theoretically, then, there'd be no weak side, as each offensive player could receive the next pass. We encourage and teach the backcourt defender to use the foot nearest the sideline as the back foot and the foot nearer the middle as the front foot.

**DUDEY MOORE, La Salle:** This question can hardly be reduced to a simple answer—that of forcing the offensive backcourt man to the outside or permitting him to go down the middle. Generally, we never want to give him a lane down the middle. We may, however, overplay a half step to his right to close the right lane, as many right-handers don't drive or shoot too well going down the left side. Of course we'd want to do just the opposite against the left-handers; or play straightaway on the player who can drive equally well both ways—trying to force him as wide as possible.

I always want a boxer stance (one foot forward). It's impossible to say which foot to keep forward. This hinges on the offensive man's moves. For example, if you'd like to have the boy playing with his right foot forward, a good fake would force him to step back, and then his left foot would naturally be the forward member.

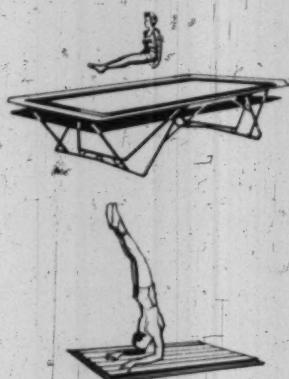
The hands work in the same way—the right hand up when the right foot is forward. On the step back with the right foot, the right hand drops and the left raises, as the left foot is now the forward foot. If the backcourt man isn't in position from which he can score readily, the guard keeps both hands at the sides. I want one of those hands raised whenever the opponent becomes a potential shooter.

**PETE NEWELL, California:** We guard the backcourt man in both manners. In one defense we overplay to the sideline, and in another defense we overplay to the middle. When we overplay to the sideline, we're essentially playing a zone press. When we give the outside to the offensive man, we're generally in a pressure type of man-to-man defense. In either instance, we always have our inside foot forward and our inside hand up.

Formerly, we only played a zone press type of defense in which we overplayed to the outside and forced the ball to the middle. Later on we felt that by interspersing this zone press with a pressure type of man-to-

(Continued on page 56)

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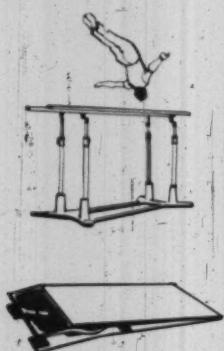
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# SHIN SPLINTS

## Cause • Care • Prevention

**S**HIN SPLINTS have been explained by many people in the sports and medical worlds, but I've never been satisfied with these explanations.

The commonly accepted belief that the muscles are pulled away from the bone or that the muscle tears from the pounding on hard surfaces, prompted me to search for a more reasonable explanation. I carefully checked many anatomy and medical books and discovered a most interesting fact that may have been overlooked.

First, we must understand the anatomy of the leg. Since shin splints affect only the front of the leg, we need describe only this area.

The leg has two long bones—the tibia and the fibula. The tibia can be felt in the middle of the leg, usually called the shin bone. The fibula ends in the outside ankle bone and can be felt if we start from this point and work upward.

The muscles that lift the foot up—this is called dorsi flexion—are primarily the tibialis anterior, extensor hallucis longus, and extensor digitorum longus. These muscles are attached to the outside surface of the tibia.

There are no muscle attachments on the inside of the leg, on the surface of the tibia. This is an important fact to note in view of some explanations of shin splints. These muscles blend into tendons above the ankle, pass under two ligaments, and insert into the proper bones of the foot. These ligaments are the transverse crural and cruciate crural ligaments.

The transverse ligament is the

By JOSEPH GOLDENBERG,  
D.C.

Physical Trainer, New York University

one we're concerned with. It consists of a band of fibers that are pliable, inelastic, and very strong. Tendons have the same properties.

The transverse ligament is U shaped, one to two inches wide, and is found in front of the lower leg just above the ankle. It's attached on the inside to the tibia and on to hold the tendons in position, thereby giving the muscles maximum leverage. You can test this by placing your fingers just above the ankle, on the shin bone, and dorsiflexing your foot.

You can feel these tendons trying to pull away from the leg. This is where the trouble starts.

During my research, I taped a sprinter's ankle in my special way. I used a double layer of 1½ inch tape. This tape was ripped just as if it were paper, a clean cut, and everyone knows how strong even one layer of tape is. This proved to me that the transverse ligament as well as its attachments to the bone, must be very strong. If this is so, then where is the weak spot?

I believe that the weak spot is in the transitional area where the ligamentous tissue becomes fascia, non-specialized tissue. This is about two inches above the ankles. The most common place for the first symptom of pain is in this area, usually on the inside of the leg just off the shin bone.

It's also possible to start on the

outside of the leg in the area of the ligament's attachment to the fibula. It's the tearing of this fascia that produces the pain and discomfort of shin splints. This tearing may continue up the leg unless proper care is given to arrest it.

Using medical terminology, we can now say that shin splints are caused by excessive pressure upon the transverse crural ligament by the tendons of the muscles, namely the anterior tibialis, extensor digitorum longus, and the extensor hallucis longus, when the foot is dorsiflexed to its maximum.

Now that we know what causes shin splints, what can we do for it?

I suggest the application of ice cold wet towels for a half hour, several times a day, for a day or two depending upon the degree of pain and the extent of damage. This should be followed on the following days with alternating hot and cold wet applications.

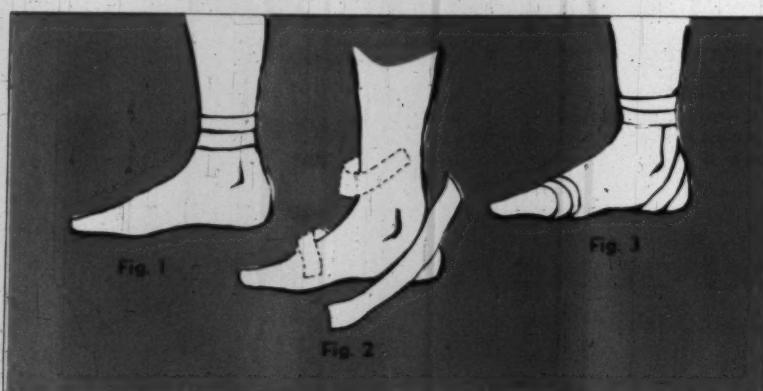
A hot wet towel should be wrapped around the tender area for 3-5 minutes, being repeatedly dipped in hot water so as to maintain the heat. This should be followed by ice cold wet towels for one minute. This procedure should be employed for at least a half hour over a period of several days.

If the athlete experiences pain even while walking, tape should be applied. The purpose of the tape is to restrict the dorsi flexion of the foot and to reinforce the transverse ligament. I used 1½ inch tape with complete satisfaction.

In applying tape, never pull it tight. Place it on the skin so that there's a minimum amount of interference with circulation. The foot should be pointed downward just slightly.

**First:** Place two strips of tape around the lower leg, over the transverse ligament. This should cover an area about 3 inches above the ankle (Fig. 1).

**Second:** Apply four strips of tape, about 15 inches long, forming two double layers. One layer is used on each side of the ankle. Center the tape on the side of the heel, just below the ankle bone, at a 45° angle (Fig. 2). The lower ends wrap around the arch and instep, the



upper ends wind around the lower leg.

Anchor the ends over the arch with two strips of tape, and on the upper end use two more strips to cover the previous strips placed over the transverse ligament.

If it's necessary to use this taping for several days, it should be removed every night and the area thoroughly cleaned and washed. It must always be applied before running.

No guarantee of preventing shin splints can be given, but some attempt should be made to strengthen this area. One of the best exercises that can be used is the "heel-toe, rock and roll." You rise up on your toes as high as possible, return to the normal position, then roll onto your heels.

Don't over-exercise in the beginning. This can be practiced several times a day, and should be done well in advance of the season for your sport.

## Box-and-One Zone

(Continued from page 16)

center of the lane and forward to help protect the bucket.

Notice the shuttle service of the two guards. When one guard moves to the ball, the other drops quickly. This is reversed with a pass to the other side. When guards understand this movement and make it quickly, coming out of nowhere as it were, many passes into the pivot will be intercepted.

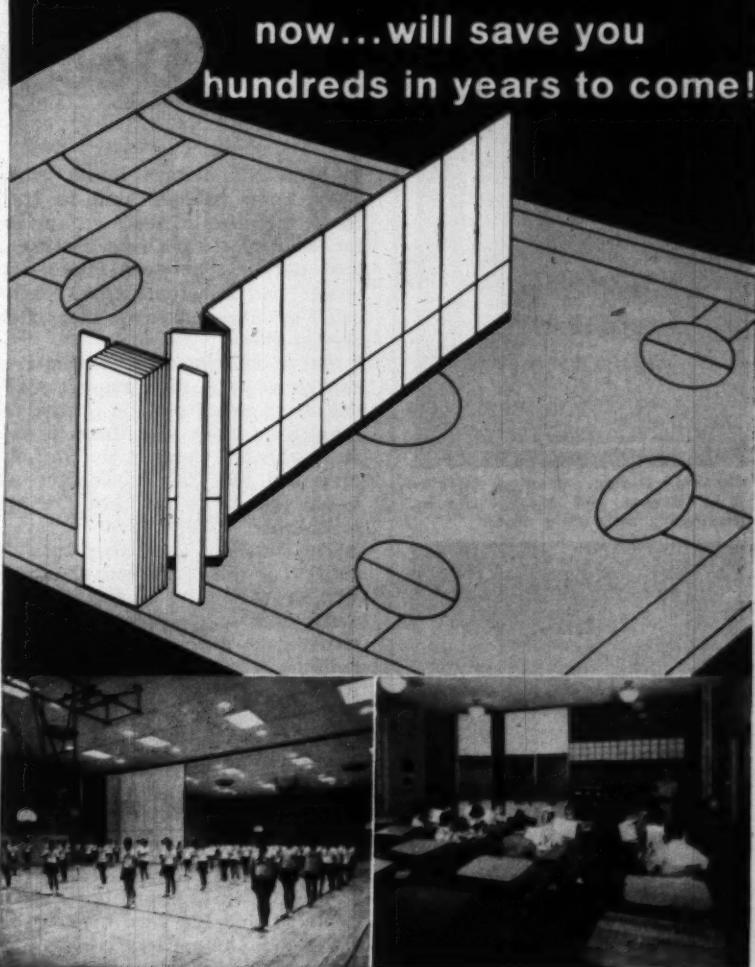
A word on the defensive points of stress is important here. In **Diag. 1**, notice that X-5 isn't playing 1 tightly, but that he continues to drop before 1's advance.

This is done to obstruct 1's passing lanes as much as possible. If he passes, we want it to be a looper that will give our zone a chance to solidify or intercept. Should a shot attempt by 1 become apparent, X-5 moves up to bother the shot.

In general, it's understood that we'll give the shot from the outside in order to maintain a strong internal defense.

The box-and-1 defense when played in this manner provides an interesting half-court spectacle. The opponents' high scorer is held to a minimum of points. The zone fills the passing lanes and runs with every new ball position to disconcert the offense. The defense, realizing this, gains eagerness and places an aggressive resistance in the path of the attacking team.

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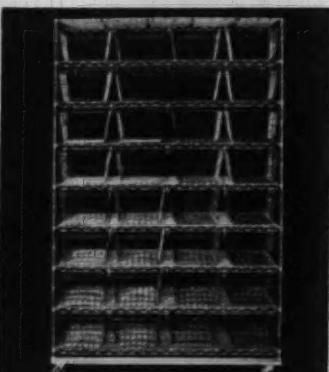
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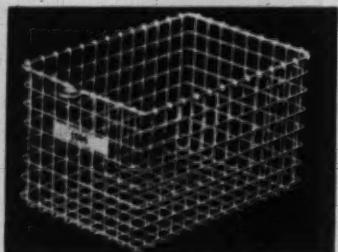
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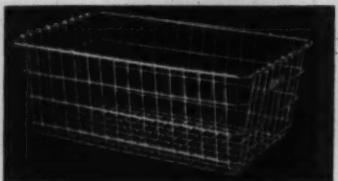
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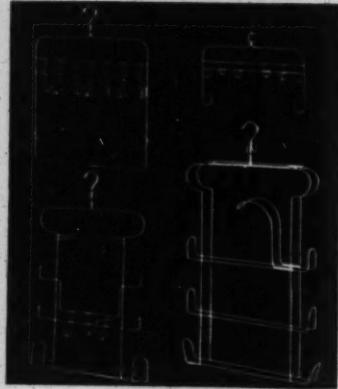
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# The Swimming Decathlon

**H**AVING always found swimming coaches akin to track mentors in their enthusiasm for their sport—perhaps because of the parallel between them—the writer has felt that these coaches could profitably borrow ideas from one another.

Out of this conviction and interest burgeoned the Swimming Decathlon. A success from the outset, this two-day aquatic decathlon is now an established event in the St. Louis area and bids fair to achieve national popularity on both the high school and college level.

The first step in setting up a decathlon is the formation of a valid scoring table and a suitable program of events. Our table is constructed on a points-for-time basis, running from 10 to 100 in 10-point intervals. The better the time, the higher the point score. The times at the maximum (1000) point level are world's records or their equivalent.

Our table incorporates 15 events, namely:

- 40, 50, 100, and 200 yard freestyle.
- 40, 50, and 100 yard backstroke.
- 40, 50, and 100 yard butterfly.
- 40, 50, and 100 yard breaststroke.
- 120 and 150 yard individual medley.

The host school may pick any 10 of these events; consequently, it's possible to conduct a decathlon in any size pool.

The athlete participates in five events each day, receiving a proportionate number of points for the time posted in each race. For example, an athlete will tally the maximum (1000 points) for a 48.8 clocking in the 100 freestyle; or 19.0 in the 40 butterfly; or 1:27.7 in the 150 individual medley.

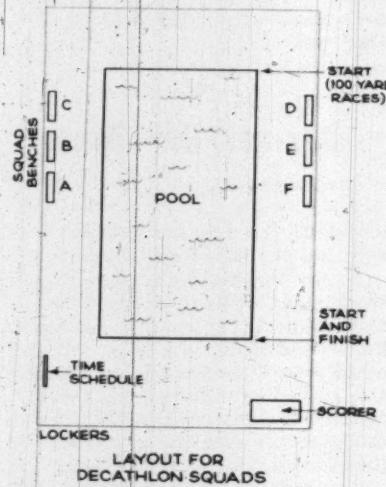
To further explain the points-for-time set-up, let's take the 100 yard freestyle as an example. The range of points extends from the aforementioned 1000 for 48.8, to 500 for 59.5, to 10 points for someone who struggles through 1:48.0.

A similar relationship exists in all the events. Success on the part of the swimmer depends on his ability to score in each event and register highest in his specialty.

Here's a sample of a segment of the 100 freestyle column showing the 10-point intervals:

100 Free	Points
57.0	590
57.2	580
57.4	570
57.7	560
58.0	550

The Decathlon may be conducted by the host high school or college anytime after the athletes have reached competitive physical condition.



During the season we become acquainted with the better swimmers and their ability through dual and league meets. As time passes, we compile a list of the boys we feel capable of performing all events. We limit the number of entries to three from any particular school.

A personal invitation is sent to each boy. His coach is sent the same information and asked to attend and help officiate. In the case of those schools without a top swimmer on our original list, we contact the coach and allow him to pick one boy from his team. We explain the necessity for limiting entries due to the time factor. A \$1 entry fee per boy is converted into awards.

Six squads of swimmers is ideal; hence, 24 entries for a four-lane pool and up to 36 for a pool with six lanes. Each swimmer is drawn

By **BILL MILLER**, Coach, Beaumont High School, St. Louis, Mo.

**RECOMMENDED ORDER OF EVENTS  
AND WINNER'S SCORES**

**FIRST DAY**

40 Free	19.9	560
100 Breast	1:20.0	450
100 Back	1:05.8*	600
40 B-Fly	23.4	500
120 I-Med	1:17.6	690

Total 2800

**SECOND DAY**

40 Back	22.2*	670
100 Free	57.0*	590
100 B-Fly	1:12.5	490
40 Breast	26.5	550
200 Free	2:16.1	590

2890

Ten event Total 5690

\*Represents individual record.

into a squad by lot. Benches are placed around the pool with squad cards (A, B, C, D, E, and F) and squad members' names posted above the respective benches.

On the first day, all competitors meet for a few minutes for instruction on general procedures:

1. What events to be held that day.
2. The order in which they swim ("A" squad first always and then in alphabetical order).
3. How lanes will be alternated (a boy in lane 2 the first event moves to 3 then 4 then 1 for each successive race).
4. General time schedule (approximately 30 minutes for long races, 25 for shorter ones).
5. The important point that success depends on completion of every race so that points are earned in all 10 events.

A master time schedule is also posted near the pool clock.

Coaches are used as officials. Fifteen are needed: starter-referee, 3 timers per lane—one in charge to record each watch, scorer—to convert time into points, clerk of course (usually host coach) to line up contestants in proper lanes and handle time cards.

By allowing 30 minutes we're able to swim the six squads, record the times, announce each boy's time, the points earned, his accumulated point total, and the top 10 contestants thus far. This is absolutely necessary to keep interest and promote full effort.

The times and point record of each boy is mimeographed in order of finish (total points) and sent to him and his coach for reference  
(Continued on page 58)

Pretty tough to win if you can't control the boards!

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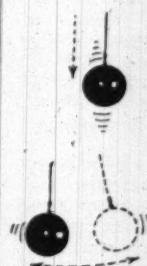
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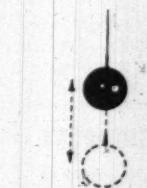
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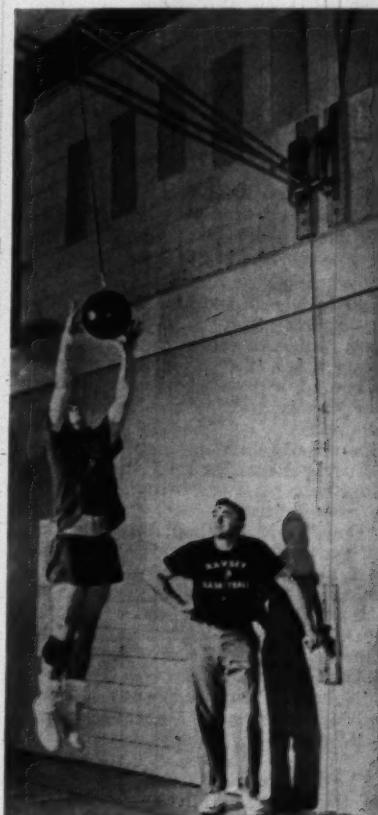
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# COACHES' CORNER



Please send all contributions to this column to Scholastic Coach, Coaches' Corner Dept., 33 West 42 St., New York 36, N. Y.

**WHEN** Frank Leahy was a tackle at Notre Dame, the varsity was running plays at the scrubs. Three straight times the famous Irish off-tackle play was stopped at the line of scrimmage. Each time the offensive tackle (Leahy) and the ball-carrier wound up at the bottom of the pile.

After the third time, Knute Rockne walked over to Leahy. "Frank," he said, "I always knew you were a great defensive tackle, but I didn't know how great until you piled up three plays while playing offense."

**The former Missouri coach**, Don Faurot, claims that a football coach who's forced to resign under pressure is very much like the mischievous little son of a young widowed mother who was so bad he was the talk of the town.

Eventually his mother remarried and several months later the boy was asked how he was getting along with his new father.

"Fine," said the boy. "He takes me out hunting in the woods and lets me walk back all by myself. He takes me fishing out in the middle of the big lake and lets me swim back to shore."

"Don't you find swimming all that distance quite afeat?" asked the shocked townfolk.

"Not at all," replied the boy. "There's nothing to it once I get out of the sack."

**The football-coach** was checking in his team at a small hotel when he noticed a black spot on the register. "What's this?" he asked.

"Only a bug, sir," replied the clerk. The coach flung down the pen. "Darn it," he roared. "When the damned alumni crawl out of the woodwork to see what room I'm assigned—that's too much."

**George Makris**, Temple's new football coach, attended the University's

annual journalism clinic for Pennsylvania high school students. Just before the clinic signed off, a budding newspaperman signified that he had one more question.

"Coach Makris," he said, "you've just signed a three-year contract. Do you expect to be here four years from now?"

**As the horses prepared** to go to the starting gate for the featured race, the millionaire owner addressed his oat burner—who hadn't won a race all season.

"I've spent money on you. You've lived well, traveled widely, eaten the best hay and oats. Yet you've never won a race. Win this one or I swear, tomorrow morning you'll be pulling a milk wagon."

The horse started poorly and got worse. The jockey was whipping harder and harder. Finally the horse turned to the jockey and said:

"Hey, take it easy, will you? I gotta be up at 4 o'clock tomorrow morning."

**Fred Perry**, the great tennis star, fancied himself as a golfer. Playing with Ellie Vines one afternoon, he

## COACHES' CORNER TREASURY

**A**LL you nice people who've been hanging around this Corner these many years will be interested in Prentice-Hall's new book, "Treasury of Sports Humor." Written by the curator of the Corner, Herman L. Masin, it offers a collection of the funniest rib-ticklers that have appeared in Coaches' Corner plus many other short humorous pieces and anecdotes. As fodder for your speeches and for just plain entertainment, this Treasury is positively tops. You may order your copy from Prentice-Hall, Inc., Englewood Cliffs, N. J.

couldn't do anything right. His game went from bad to disastrous. At the 14th hole, he exploded.

"You dumb little blighter," he raged at his caddy. "What good are you? All you've done is carry the bag. Not once have you opened your silly mouth. Just tell me what club to use just once. Let me hear you say something. Speak up, tell me what to use?"

The caddy regarded Perry in silence for a moment, then he spoke: "Mister, you asked me what to use. Use an old ball, a real old ball."

**Kink Richards** was a rookie halfback for the N. Y. Giants back in 1933, the year the pros returned the goal posts to the goal line. Against the Eagles that season, Richards broke loose and was sure to score, but suddenly he set the ball down on the 5-yard line. He had forgotten about the shift of the goal posts and thought he was in the end zone.

Richards tried to explain to Coach Steve Owen. He began, "I thought . . ."

"Never mind thinking," bellowed Owen. "It slows down the offense!"

The sequel to this outburst came later. The next time Richards had trouble on the field, he was ready for Owen. As he trotted to the bench, he yelled: "Coach, don't say a word. I was thinking again!"

**Tom Thorpe**, the famous referee, once suspected that a lineman was swinging his fists at his opponent. But he always looked too late to see the blow. The opponent finally rebelled. With no subterfuge whatever, he simply reached up and clobbered the dirty-playing lineman.

The original culprit howled to Thorpe. But he received no satisfaction. "I sure did see it," snapped Thorpe. "And I thought it was a good idea."

**The two male golfers** went berserk playing behind a pair of female duffers. The gals stopped to chat, picked flowers, admired the scenery, while the poor fellows behind them raged.

At one point, the two men stood on the tee for nearly 25 minutes while one of the women apparently looked for her ball a few yards down the fairway.

"Why don't you help your friend find her ball?" they yelled to the second woman who stood watching her companion search.

"Oh, she's got her ball," the woman replied sweetly. "She's looking for her club."

**The team's star tackle**, a fellow with broad shoulders and a low brow, was prevailed upon to take a public speaking course. It's a snap, he was assured. In his first day in class, he was called upon to make a five-minute speech. He broke into a cold sweat.

He struggled to his feet, stood silently for 30 seconds, then said, "Ladies and gentlemen, let's all bow our heads for five minutes of silent prayer."

**Lindsey Nelson**, NBC's top telecaster, and his partner, Fred Haney, the ex-manager of the Braves, recently toured Germany entertaining our troops. During their stop-over in Oberammergau, they went through the unique auditorium that houses the famed Passion Play every 10th year. The guide explained that the section for the audience is roofed, but the stage has only the sky for its ceiling—and that even if it rains during a performance, the show must go on.

"They have two sets of costumes," the guide told them, "in the event they get too wet."

"How long does a performance last?" asked Haney.

"About seven and a half hours," said the guide.

"No wonder they have to play in the rain," said Haney. "They can't play two tomorrow."

"**How many players** would it take to make Kansas City a pennant winner?" Bob Elliott was asked.

"Just two," replied the A's manager.

"Only two? You're kidding."

"No sir," smiled Elliott. "Just Walter Johnson and Babe Ruth."

**Woody Hayes's son**, Steve, came home from school with a beaming face. "Look, Dad," he exclaimed, holding out his report card. The Ohio State coach looked—and saw three A's and two B's.

"It's fine, Steve," he said, but, ever the perfectionist, he added, "But don't you think it could stand some improvement?"

The boy's head fell, and Woody realized he had made a mistake. "I'm sorry, Steve," he said, trying to make amends. "But I was visiting with Bud Wilkinson last week, and he told me that his son, Jay, had made straight A's."

A twinkle appeared in Steve Hayes' eyes. "Yes, Dad," he said, "but Jay Wilkinson's father won 45 straight games."

"I always try to make a prospect welcome," says Woody Hayes. "I always go up to him, give him a big hello, shake his hand, and clap him on the shoulder—then slide my hand down his arm."

**When that essence** of sweetness and goodness, Billy Martin, slugged the young Cub pitcher, Jim Brewer, fracturing his cheek, he was fined \$500 by the league presy. Martin's teammates, sympathetic for some strange reason, chipped in to defray the fine.

A week later Martin was sued by the Cubs for \$1,040,000. His teammates still sympathetic but now amused, assured Martin of their support.

"Don't worry, Billy," murmured one of his pals, "it'll cost us only \$35,000 apiece."

Martin's initial reaction to the suit was classic: "I wonder if they want me to pay it in cash or by check."

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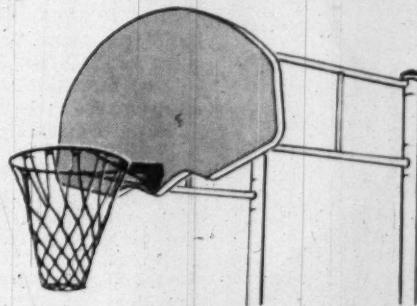
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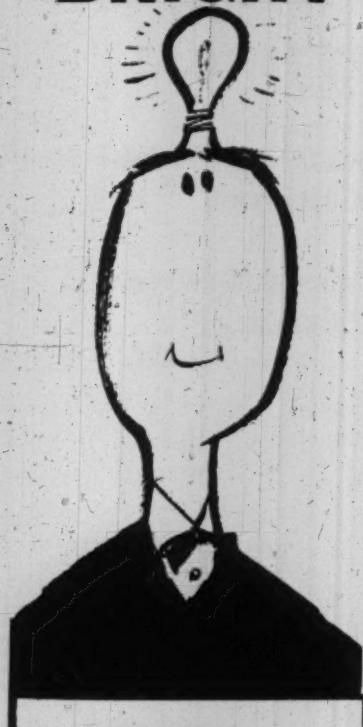
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## Is Warm-Up Necessary?

**M**ANY physiologists, physical educators, and coaches have expressed their views as to why an athlete should participate in some type of preliminary exercise immediately preceding actual competition or practice.

Most of these views seem to be based on opinions rather than on corroborating facts. In reviewing the related literature, it was found that many of the writers were in accord as to the beneficial results of warm-up activities.

F. A. M. Webster<sup>39</sup> stated that preliminary exercises are subdivided into three categories: informal, stretching, and formal. He maintained that an athlete makes his informal movements for the purpose of warming his muscles, does the stretching exercises to increase the elasticity of the tendons and muscles, and finally undergoes a short series of formal exercises for the purpose of stabilizing the technique in his mind and for rehearsing the muscles in the movements they'll have to make during competition. He also stated that:

"A proper limbering-up process while the athlete is wearing his sweat suit lowers the viscosity of the muscles, and also warms them to an admirable degree of regular responsiveness. In addition the depth of intertidal breathing and the rapidity of the heart-rate are adjusted, while the functions of the respiratory system are facilitated."

Karpovich<sup>13</sup> agreed with Webster on the three types of warm-up exercises. He wrote:

"The informal movements are the general, free movements (such as swinging the arms about and stationary running) undertaken solely for raising the temperature of the muscles. This is achieved through the liberation of heat during contraction of the muscles and also through an increased blood flow from the inside of the body. A greater blood supply will insure a greater output of energy because more oxygen and nutrients will be brought to the muscles and the wastes will be removed more rapidly. A warm muscle will also have a lower viscosity which is of a great importance."

The consistency of a muscle is somewhat similar to jelly. Jelly becomes more solid or viscous at a high (low) temperature. Although the temperature of the big muscles does not change much, nevertheless, the increased viscosity may be noticed in a

certain stiffening of the muscles. Small and superficial muscles are more subject to these changes. Everybody knows the awkward movements of the fingers on a cold winter day. A lower viscosity makes possible faster movements.

"The stretching movements increase the elasticity of the muscles and tendons, thus minimizing the possibility of injury. They also increase the contractility of the muscle. After several stretchings a muscle will contract with a greater power."

Lagrange was quoted by Bainbridge<sup>2</sup> as stating that a rise of temperature increases the efficiency of the skeletal muscles, and that the advantages of a preliminary warm-up are due to a rise in temperature in the active muscles.

### PREPARE THE MUSCLES

Bilik<sup>8</sup> asserted that one should warm up to prepare the muscles, the heart, the circulation, and the respiration for the coming effort and to prevent pulled tendons. Bilik made the following statements about the effects of warmup on circulation and on the heart.

"When a muscle is at rest it receives a normal blood supply, which takes care of the nourishment and the cleansing of waste products of the muscle. Additional work or energy expenditure means the necessity of an increased blood supply, which is effected by an increase in the rapidity of flow, so that more blood enters the muscle at a given time. The products of oxidation incidental to the muscle activity must be removed quickly and in large quantity, or the lactic acid, which is one of the products, will accumulate, causing fatigue, soreness and stiffness."

"At the same time vigorous activity calls for a great increase in the blood supply to the muscles involved, more nourishment for the production of energy and more oxygen being indispensable. It stands to reason that such a profound readjustment of bodily function cannot be expected to materialize in an instant. Therefore, another vital aim of warming-up is the adjustment of the blood circulation."

"Then there is the heart. While not directly involved in the muscular activity the effect of sudden unprepared-for demands on this blood pump is apt to prove detrimental. An athlete is burned out or killed, because of failure to treat a delicate piece of

machinery with due consideration. The heart must be gradually warmed up to the enormous task of carrying a man through an extreme athletic effort."

Gould and Dyes<sup>8</sup> stated that in the general warming up process athletes improve their general circulation, remove the danger of early contracture, obtain the early beneficial effects of treppe, and produce a slight rise of body temperature.

This slight rise of temperature favors the underlying biochemical reactions upon which the development of energy for the muscle responses is dependent, improves muscle tonus, quickens the response—especially the relaxation, and probably diminishes the viscosity of the muscle fluids. They further stated that:

"We are now in a position to view the development of fatigue from a slightly different point of view. Any condition which will delay either the formation of lactic acid from its precursor glycogen or its neutralization will consequently diminish the rate of the mechanical response and at the same time prolong all phases of single muscle twitch. We are now also in a better position to understand more clearly why an increase or decrease in temperature will accelerate or diminish, respectively, the rate of response in muscles. Contraction is dependent upon the liberation of hydrogen ions on the surfaces of the muscle structures (cleavage of glycogen into lactic acid), while relaxation is dependent upon its neutralization by the muscle buffers.

"Since the temperature coefficient of the former is 2.5 for each rise of ten degrees C. and for the latter 3.6, it is obvious that temperature changes will affect the relaxation phase to a greater extent than that of the contraction. It is because of this fact that cold slows the relaxation phases considerably more than the other phases of the response. On the other hand, warming up shortens it so that it more nearly corresponds in time duration with that of the contraction phase."

Morehouse and Miller<sup>24</sup> wrote:

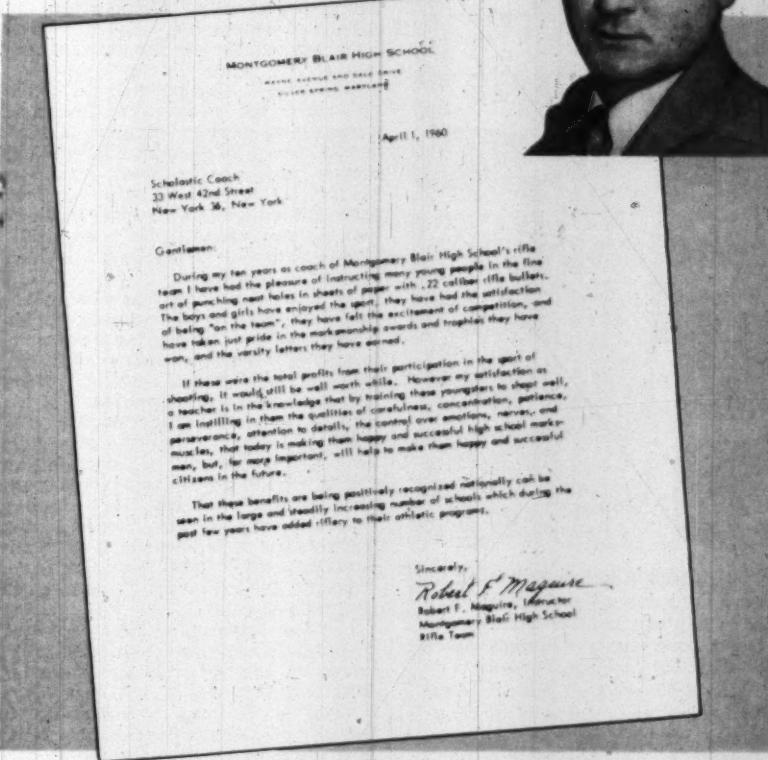
"Observations on the contraction of isolated muscles provide a clue to the nature of the warming-up process. If the muscle is warmed, the speed with which the muscle contracts and relaxes and the force of contraction are all increased. If a previously inactive muscle is stimulated repeatedly, the first few contractions are often small and irregular and relaxation is incomplete. After this, the contractions become stronger and relaxation is complete.

"It is probable that warming up is due in part to these changes in the muscle itself, involving a local rise in temperature and the accumulation of metabolic products. It is possible that the viscosity of the muscle is thereby decreased, allowing contraction and relaxation to occur with greater promptness. In the body these same factors also increase the local blood flow through the muscle by dilating

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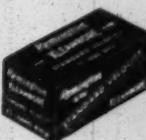
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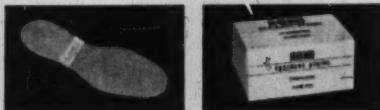
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the small blood vessels. This improves the functional condition of the muscle by increasing its oxygen supply."

Karpovich<sup>15</sup> made the following statement about oxygen consumption:

"Any textbook on the physiology of exercise contains material showing that the maximum intake of oxygen is reached only after a certain period of work, and therefore, warming-up should be considered beneficial. It is also an elementary fact that the initial stage of endurance type of physical work is more expensive in terms of oxygen than successive stages. Warming-up, therefore, should make exertion more economical. An exception is an intensive active warming-up, which leaves the subject with a large oxygen debt at the start of the contest."

Stansbury<sup>16</sup> implied that in order to secure the proper results from warm-up, a number of physiological factors must be recognized; namely, proper rest, proper food, situation conducive to proper digestion, air free from contamination, proper elimination, proper care of the body, individual limits of fatigue, etc. He also concluded that:

"Scientists have not as yet determined the extent of warming up for individuals per activity and per condition; consequently, until such a determination is made, each one of us will have to decide the extent of his own level by trial and error."

Miller<sup>17</sup> maintained that the four general advantages of warming-up are: greater safety, physiological economy, mental readiness, and effective coordination. He also implied that warming-up was beneficial for improvement in skill, endurance, strength, and speed activities in track and field events.

Lawther exemplifies many coaches' thoughts about the relationship of warm up and speed in the following statement:<sup>18</sup>

"The preliminary warming-up to reduce viscosity, increase elasticity and flexibility, and tune the system to a higher physiological tempo (heart rate, blood flow and pressure, respiratory adjustment), adds to possible speed."

In regard to warm-up and its effect on endurance, Williams and Nixon<sup>19</sup> suggest the following:

"The warming-up exercises in which all athletes engage before strenuous competition have a close relation to endurance. The athlete commonly thinks of the warming-up exercise solely in relation to the muscles. He realizes that muscles work more efficiently when warm and are less likely to be injured. But we ought to note that warming-up promotes endurance because it sets in motion the whole process of bodily functions involved in violent muscular effort. The athlete who plunges into strenuous activity without this preliminary warming-up is likely to become exhausted before these functions have time to get well under way."

The effects of warm-up on accuracy haven't perhaps been explored as

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adequately as the relative effects of warm-up on speed and endurance. Lawther<sup>18</sup> throws light on this important area of physical performance:

"The principles of physiological efficiency mentioned earlier in connection with warming-up before competition are especially applicable to accuracy. One tunes up his physiological mechanisms, checks and puts a last minute touch to his motor patterns, and readjusts his perceptual habits to the somewhat different backgrounds. The muscles become more elastic and more ready, body flexibility is increased, and the skill patterns get a motor rehearsal that warms and activates the muscle patterns and removes any chance sluggishness or temporary resistance to performance."

Stansbury<sup>33</sup> stated that the things which will determine the effects of warming up are: (1) speed of movement, (2) resistance encountered, (3) condition of the individual, (4) age of the individual, (5) duration of the warm-up, (6) position of the body, (7) sex of the individual, and (8) psychic conditions of the individual.

Bilik<sup>8</sup> states that another value of warming-up is the reduction of "pulled tendons" because:

"The muscles of the body are arranged in antagonistic sets. Thus the flexors work against the extensors and vice versa. But the body has wisely provided for coordination between these antagonists, by means of specific neural supply. Thus suppose you want to flex the lower limb at the knee. The extensor muscles on the front of the thigh keep the knee in extension. It is clear that if the flexors on the back of the thigh are to achieve their purpose of flexing the knee, the extensors must let go. And that is exactly what happens. The stimulus which travels to the flexors to activate them to contract also travels down a special set of nerve fibers to the extensors, causing the latter to relax.

"In normal daily activity this coordinative action runs along at a certain rate. Suppose now an athlete decides to let loose at top speed without preliminary warming-up. The knee is flexed. The extensors may not relax, but instead develop tension aiming to straighten the leg. As the movement progresses the runner snaps the leg forward.

"What will happen now will depend on whether the flexors were ready to let go evenly which is the case when the muscles have been thoroughly warmed up to this particular form of movement. If they were not, then in flinging the leg forward you put an enormous strain on a tensed chain which may snap at its weakest link, which is at the tendon attachment or at the narrowest or thinnest part of the tendon."

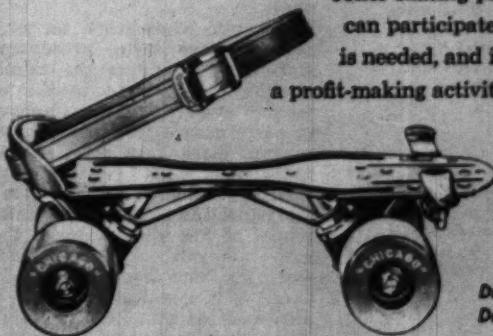
Coaches of almost every athletic activity accept these values of warming up as beneficial and factual. However, some athletes and coaches are inclined to question the extensive preliminary warm-up activity on the basis that the athlete may have already exhausted a needed part of his



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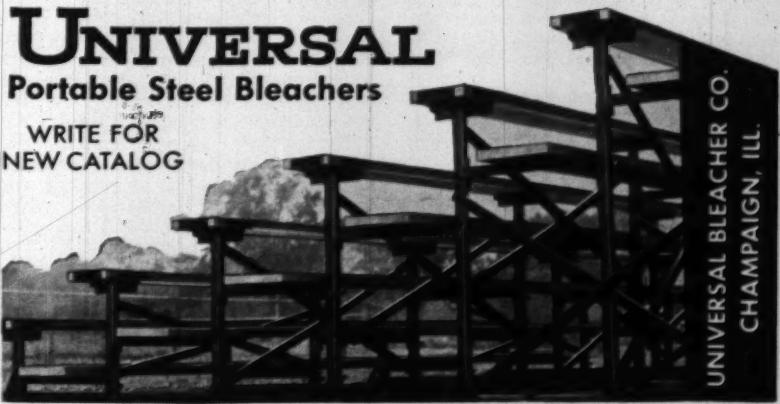
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energy when the time arrives for the major performance.

Recently, however, the value of warming-up has been seriously challenged by a group of research workers in the field. The individuals who have aroused controversy from their experiments and publications on warm-up are Karpovich and Hale.<sup>16</sup> They question seriously the value of warm-up as an aid in improving performance:

"Two reasons are advanced for general warming-up. It is said that the strength and speed of muscular contraction increase with a rise in muscle temperature, and that the possibility of injury due to sudden forceful muscular contraction is lessened. The formal warming-up is credited with an improvement of coordination. While there seems to be general agreement regarding the importance of the formal type of warming-up, the effects of general warming-up may be questioned. True, no one will question the beneficial effect of warming-up when limbs may be almost numb from cold, but there is a suspicion that the practice of warming-up is frequently overdone."

"To our knowledge no objective evidence has been presented that warming-up reduces the number of athletic injuries. As to the experimental evidence of an improvement in performance resulting from warming-up, there have been few studies reported."

Hipple<sup>10</sup> maintains that as a physical education teacher in a junior high school he has often watched the boys run "all out" with absolutely no warm-up, and has observed only a single case of a pulled muscle. Hipple also asserted that Dr. Maxwell Howell, a former Australian rugby star, stated to him that athletes and coaches in Australia ridicule the American system of tiring the athlete by warming-up before a race. However, the Australians do have their muscles rather well massaged before a contest.

Schneider and Karpovich<sup>20</sup> maintained that any warming-up advantage is not due to the staircase phenomenon. They wrote:

"One can readily see that the 'staircase' can hardly be of practical consideration because (1) an athlete before competition hardly, if ever, has fresh or rested muscles; (2) muscle contraction in man is caused by a volley of closely spaced nerve impulses, and therefore the staircase improvement will be attained in a fraction of a second during the first contraction."

Karpovich<sup>12</sup> agreed that formal warm-up aids the athlete, but stated that the vast amount of running and calisthenics done before some sports—like basketball, track, and football—seems just a waste of time.

Karpovich<sup>14</sup> also stated that unless ambient temperature is so low that the limbs are numb from cold, there's no particular need for general warming-up, at least not for distances up to 440 yards. He wrote that records for longer distances have been broken

without warming-up; that it is hard to accept facts when they contradict traditional beliefs, but one cannot escape the conclusion that for short distances, warming-up is probably nothing more than a ritual. He also maintained that the same may be true for longer distances.

## STUDIES ON WARM-UP

Skaggs<sup>31</sup> did a study using a fairly complicated perceptual-motor task and found warming-up effects in about 40% of his records. The degree of skill attained seemed not to be of any particular significance. He stated that any condition which will make the subject keenly alert and determined to do his best at the outset will tend to lessen the frequency of occurrence of the warming-up effect.

Skaggs was inclined to the view that warming-up is largely a matter of attitude, mental alertness, and attention. He stated that in physiological terms the warming-effect represents a phenomenon of the central nervous system. He also asserted that the locus of the phenomenon is in the neuro-muscular system in the cortical areas, involving a proper arousal of cortical "sets" or the exercise of nerve-synapse systems.

McCurdy and McKenzie<sup>20</sup> stated that Hoskins and his associates showed adrenalin increased activity of skeletal muscles. McCurdy and McKenzie also cited Berner and his associates as stating that second wind occurred more readily when the room was warm and when heavy work was done.

Berner and his associates maintained that the work raises muscle temperature and is probably one factor in second wind, and that lactic acid is also probably more readily removed with warm muscles and an active circulation.

Buchthal and others, as cited by Karpovich,<sup>11</sup> showed that muscle temperature depends on the magnitude of work and is due to aerobic heat production.

Manus Neilson<sup>27</sup> did a study on "The Regulation of Body Temperature in the Case of Muscle Work." Neilson found that body temperature increases up to a certain level with increase of work intensity, then holds at that level.

Convection, radiation, sweating with evaporation, etc., are a part of the temperature-adjustment process, but wide variations of outside temperature can occur without much or any effect on this inner body temperature from intense work. He made the point that the higher temperature from work is regulated from within the body with the implication that this is a physiological efficiency-adjustment process.

Carlile<sup>5</sup> conducted an experiment in swimming in which he used hot showers as a passive type warm-up for his subjects. He stated:

"1. A subject showed an improvement in swimming performance in 200-yard swims of 1½ per cent fol-

lowing 8-minute hot showers. The difference in swimming speed was statistically significant.

"2. Ten swimmers in 230 trials with various strokes showed an improvement of 1 per cent for 40-yard time trials when the swims were preceded by 8-minute hot showers. A statistical consideration of the group data showed the difference in swimming speed between control and pre-heated swims to be highly significant.

"It is suggested that at least in temperate climates, some passive pre-race heating of the body, in addition to some active work, constitutes a valuable adjunct to the warming-up procedure."

Leonid Muido<sup>25</sup> conducted an experiment in swimming which pertained to the influence of preliminary exercise and body temperature rise upon performance. He exposed his subjects to preliminary jogging for 10 minutes, heavy preliminary work on the bicycle ergometer for a 10-minute period, hot showers, turkish baths, radio diathermy, and cold baths at different intervals of time. He concluded:

"1. A given distance could be swum in a shorter time when the organism was warmed previously.

"2. Both—active warming by preliminary work and passive warming by hot baths, radio diathermy and turkish baths—had the same beneficial effect.

"3. The increased rectal, i.e., blood temperature, before swimming seemed to be more essential for improved results than the increased muscle temperature.

"4. The duration of the influence of warming was at least 60-80 minutes.

"5. It is quite probable that the beneficial effect of higher body temperature is due to the increase in the velocity of reactions."

#### IMPORTANCE OF MASSAGE

Schmid, as reported by Karpovich and Hale,<sup>16</sup> stated that not only setting-up exercises, hot bath, diathermy, and shower with alternating hot and cold water, but also massage improved performance of both men and women in swimming 50 meters, running 100 meters, and riding the bicycle ergometer.

Thompson<sup>26</sup> tested five groups of subjects to determine if warm-up affected performance in speed and endurance in swimming, accuracy in basketball foul-shooting, accuracy in bowling, speed and accuracy in typing, and strength of softball players. No evidence was found of improvement from informal warm-up immediately preceding testing in swimming, typing, or strength.

Formal warm-up did improve group performance in speed and endurance in swimming, accuracy in basketball foul-shooting, and accuracy in bowling. However, no significant difference was noted in the performance of the

(Continued on page 48)



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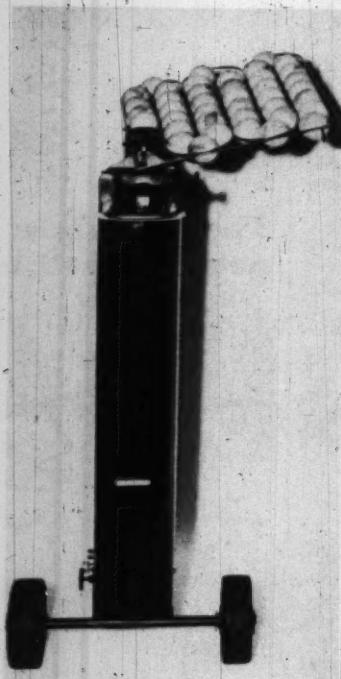


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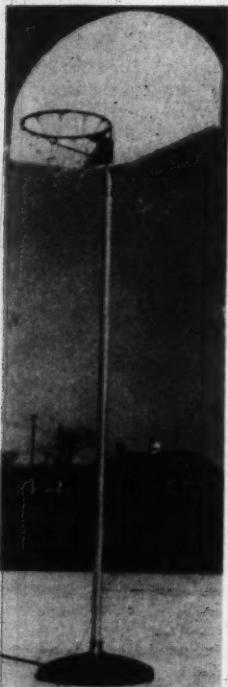
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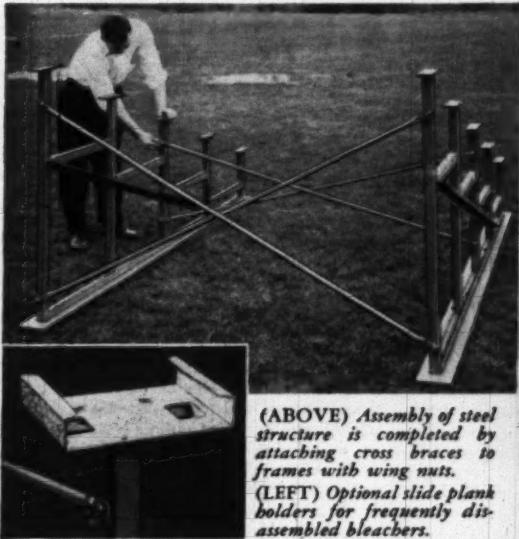


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(ABOVE) Assembly of steel structure is completed by attaching cross braces to frames with wing nuts.

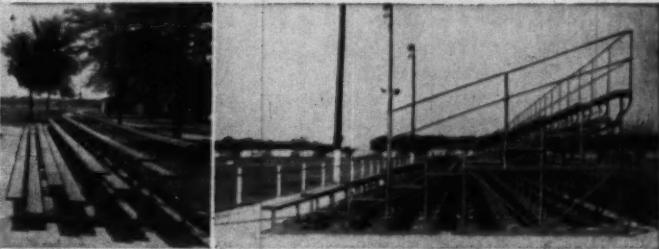
(LEFT) Optional slide plank holders for frequently disassembled bleachers.

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# Is Warm-Up Necessary?

(Continued from page 45)

typists after participating in a formal warm-up prior to the testing. Informal warm-up was the exercises in which the movements are the general, free movements undertaken solely for raising the temperature of the muscles. Formal warm-up was the exercises in which the movements are those that imitate the activity for which the performer is getting ready.

Swegian, Yankosky, and Williams<sup>35</sup> found that repetition, as a form of warm-up, tended to produce faster movement times on a simple arm-movement.

Betty A. Pacheco<sup>28</sup> reported that warming-up by isometric stretching exercises, isotonic work (running in place), or a combination (knee bends), improved performance of ten experienced subjects in the vertical jump. A second experiment was also conducted with 50 young men, with the purpose of the tests concealed for psychological control. Warm-up exercises again improved performance to a significant extent.

Blank<sup>4</sup> did a study with 54 subjects on the effects of optimum warm-up and minimum warm-up in running the 100-yard dash and the 120-yard dash. The optimum warm-up consisted of walking and running, in addition to the following exercises: skeleton dance, woodchopper, trunk sideward bender, standing windmill, knee grasp, jog in place, jumping jack, hurdle split, sitting windmill, and bicycle.

The minimum warm-up routine consisted of a limited amount of walking, plus the skeleton dance. He alternated days for the optimum and minimum warm-ups before he administered the time trials. Blank's study was divided into two experiments; one experiment was with 16 experienced track men, and the other was with 38 inexperienced track men. He concluded:

"... subjects in the first experiment ran from 0.64 to 0.81 seconds faster (on the average) under optimum than under minimum conditions in the 130-yard trials, and their times following each pattern correlated in the range between 0.767 and 0.959, all coefficients being highly reliable in relation to their probable errors. In addition, the significance ratios, ranging from 14.36 to 52.16 were found to be well above the one-tenth of 1 per cent level of confidence. Thus, it is interpreted that significantly speedier performances occurred when the optimum warm-up routine was observed."

"Subjects in the second portion of the study performed between 0.39 and 0.94 seconds faster under optimum conditions than under minimum conditions in the 100-yard runs, and their times correlated from 0.873 to 0.981. Again, all of the coefficients of correlations proved to be rather high in comparison with their probable errors. The significance ratios for the group

in question ranged from 17.28 to 86.16 and, therefore, were all above the one-tenth of 1 per cent level of confidence."

Asmussen and Boje<sup>1</sup> conducted an experiment in which they used both passive warming (by radio diathermy or hot water) and warming by exercise (stationary bicycle against resistance). They summarized their findings as follows:

"1. A given amount of work could be performed better—i.e., in a shorter time—when the organism was warmed up by preliminary work. Also a greater muscular tension could be developed when 'warmed-up' than when not.

"2. A passive warming—e.g., by means of radio diathermy or by hot baths—also increased the capacity for work.

"3. Massage had no beneficial effect on the performance.

"4. The harder the preliminary work was, the higher rose the temperature and the better was the performance (only demonstrated in the work of shorter duration (12 to 15 sec.).

"5. The increased ability to perform hard work is closely correlated to the temperature of the working muscles.

"6. The maximum oxygen uptake is

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slightly higher when the organism is warmed up than when this is not the case, but the oxygen necessary for a certain amount of work is reduced.

"From these results it is concluded that a higher temperature in the muscles benefits the ability to perform work by accelerating the chemical processes in the muscles, probably also by decreasing the intramuscular viscous resistance. The accurately regulated higher rectal temperature in work (Nielsen) allows the muscles to obtain a higher temperature during work than would otherwise be possible."

Karpovich and Hale<sup>16</sup> cited Mala-recki as reporting that not only actual warming-up exercises but also merely imaginary exercises increased the speed of running 60 meters.

"Simonson, Teslenko, and Gorkin<sup>18</sup> did a study on the effects of warming-up on the performance of the 100 meter race. They stated:

"1. The influence of pre-exercise on the speed of running the 100 meters was investigated using seven subjects. In all cases an acceleration was produced.

"2. The cause appears to lie in the fact that the adjustment phase is partly run through previous to the start. In the main it is a question of the adjustment of the nervous system and of the musculature; inspiration of air mixed from 5% CO<sub>2</sub>, 50% O<sub>2</sub> and 45% N<sub>2</sub> in spite of more favorable subjective manifestations leads to no better performance.

"3. The restoration of gaseous metabolism, three subjects, and pulse, 6 subjects, is still not finished after twenty minutes. The restitution of oxygen usage, of ventilation, of pulse and blood pressure follows approximately the form of an exponential curve. The restoration velocity in the three directions has not expired.

"4. The elevation of pulse and of systolic blood-pressure is highest with running plus warm-up. The diastolic blood pressure is always lowered with running, especially in the experiment with air mixing.

"5. The vital capacity is lowered after the running of all experimental set-ups, but rises very quickly again and usually exceeds, in the additional progress of recovery, the resting value."

"6. The recovery delay is at its peak in running with pre-exercise. Nevertheless if one subtracts the value of the recovery delay of pre-exercise, one finds on the contrary that the recovery delay after the running with pre-exercise is less than running without pre-exercise. In other words, the return to normal or resting stage is a little more efficient, in time needed, after warm-up.

"7. The oxygen utilization efficiency from air respiration is worse after the exercise than during rest. The low point is reached at 2.5 minutes recovery period. The efficiency is relatively best in the tests with pre-exercise (warm-up)."

Tuttle<sup>17</sup> found that cooling the gastrocnemius by ice packs for a period

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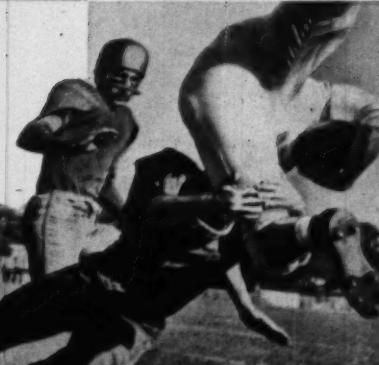
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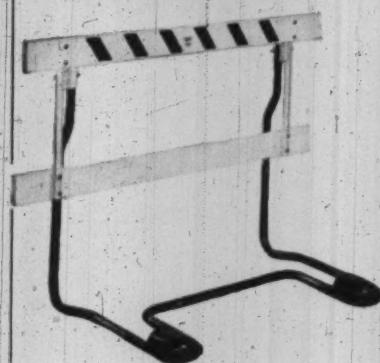
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as short as five minutes increased the time required for all phases of muscle activity, and that the longer the cold is applied the greater this increase becomes. Tuttle also reported that when the intact gastrocnemius muscle was heated by means of short-wave diathermy, the duration of both the periods of contraction and relaxation is significantly decreased.

Miller<sup>22</sup> cited a study by Bischke and Morehouse which pertained to the overload principle of warming-up. These two experimenters found that use of the 16-pound shot decreased the best throws for the 12-pound shot, and the use of the 12-pound shot decreased the best throws for the 16-pound shot. The best distances were recorded when the putters warmed-up with a shot of the same weight as that which they used in competition.

Michael, Skubic, and Rochelle<sup>21</sup> conducted a study to determine the effect of warm-up on softball throw for distance. They found that their subjects threw the softball farther after being exposed to warming-up activities.

Another reason for warming-up was given by George A. Munger.<sup>26</sup> He stated that studies conducted by him and others have revealed that a football player is most prone to injury during the first five minutes after entering a game. He therefore asserted that there's a need for re-emphasis on adequate warm-up before entering a game.

Karpovich and Hale<sup>16</sup> conducted three experiments to determine the effect of warming-up upon physical performance. They wrote:

"Three methods of warming-up were compared as to their effects on the time required for seven athletes in a 440-yd. (402-m) run. The means were obtained from 20 runs after five minutes of deep massage of each leg, 20 runs after five minutes of superficial massage (digital stroking) of each leg, and 20 runs after preliminary exercise. The differences found among these three methods of warming-up were statistically not significant."

"In a second experiment the performance of five runners in the 440-yd. run without warming-up exercise was compared with their performance after superficial massage; again the difference was insignificant. In a third experiment, an attempt was made to verify reports of other investigators that warming up by preliminary exercise improved performance; the test consisted of completing 35 pedal revolutions of a bicycle ergometer in the shortest possible time, the amount of work being 956 kg.-m. The warming-up exercise consisted of 60 pedal revolutions per minute for five minutes with a load of 5.5 lb. (2.5 kg.); it increased the mean muscle temperature by 1.3 C (2.3 F), but the effect upon performance again was not significant."

"Outstanding performances in the first experiment were made by men who had not done any preliminary warming-up. In these experiments

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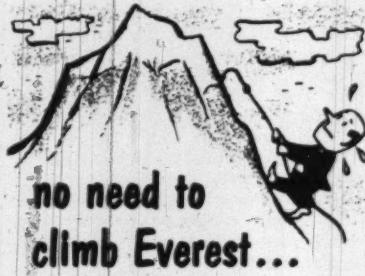
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neither deep nor superficial massage nor preliminary exercise improved the time of running; there was no evidence that massage had a beneficial psychological effect on the runner or that preliminary exercise improved sprint performance on the bicycle ergometer."

Mervyn L. Filippioni<sup>7</sup> experimented with twelve members of the Springfield College varsity swimming team. The members of the swimming team were tested with and without a warm-up for a 100-yard swim. Filippioni concluded that speed of swimming 100 yards was not improved by warming-up.

Karpovich and Pestreco<sup>17</sup> report a definite deleterious effect of warming-up in an experiment conducted in 1941. A group of excellently trained subjects who practiced bicycle ergometer riding five days a week for several months could ride the bicycle ergometers with a load of 6 to 7 pounds at 60 pedal revolutions per minute for several hours.

If the subjects were given a warming-up exercise consisting of riding an ergometer at the same rate of speed but without a load for 15 to 20 minutes, their performance would strikingly deteriorate. After riding with the usual load for as little as 10 to 30 minutes, the subjects would stop, exhibiting signs of fatigue and insisting that the load had been doubled.

However, by convincing the subjects that the load was the same and by encouraging them to continue riding, it was possible for the subjects to overcome a critical point of being unable to continue. Even though the critical point was overcome, the subjects' endurance on that day was 30 to 50% less than usual.

Hipple<sup>10</sup> conducted an experiment with junior high school boys running the 50-yard dash. Each boy ran five trials and had a rest of five minutes between each trial. Hipple concluded:

"... 90 per cent of the fastest runs were distributed equally among the first three trials, when each one of a boy's runs was ranked from No. 1 to No. 5 speed. His runs ranking No. 2 and No. 3 were distributed almost equally among the first four trials, while rank No. 4 was usually the fourth trial and No. 5 occurred most often on the fifth trial. The average speed was the same for the first three trials, became 2 per cent slower for the fourth, and had slowed 3.7 per cent by the last trial.

"Since three 50-yd. runs during ten minutes were all the exercises these boys could accommodate without the first appearance of fatigue, it seems likely that the amount of exercise used was enough to cause warm-up, if it is practical to use warm-up in eighth grade boys. The first race had no beneficial warm-up effect on the second race, and cumulative warm-up of the first and second races had no beneficial effect on the third race. The fourth and fifth races were a little slower because of fatigue. The possibility that pre-race stretching exer-

(Continued on page 62)

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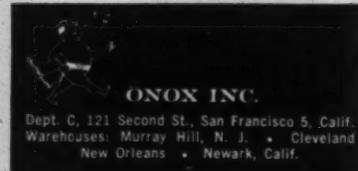
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## Aquatics Skills Course

(Continued from page 29)

- (1) Diving
- (2) Underwater maneuvering
- (3) Surfacing
- C. Snorkel Tube (60 min.)
- (1) Breathing
- (2) Diving
- D. Aqua-Lungs (60 min.)
- (1) Equipment operation
- (2) Diving
- (3) Surfacing
- E. Spear Fishing and Searching (2 hrs.)
- F. Review (60 min.)
- G. Test (60 min.)

### UNIT V

#### Body Surfing

Obviously the unit on body surfing is dependent upon the class' access to a good pounding surf. The Southern California area is ideal. The unit plan followed is shown below:

- A. Orientation (30 min.)
- B. Wave Approach (15 min.)
- C. Wave Recover (15 min.)
- D. Riding (60 min.)
- E. Trick Riding (60 min.)
- F. Review and Practice (240 min.)
- G. Test (60 min.)

### UNIT VI

#### Board Surfing

Undoubtedly the most difficult of all aquatic skills to master is the art of surf board riding. Constant practice coupled with a reasonable command of body mechanics are necessary here before the student can begin to develop his board skill. A definite order of progression should be adhered to before satisfactory results can be obtained. The order of progression is as follows:

- A. Orientation (60 min.)
- B. Smooth Water Skill (60 min.)
- (1) Mount and dismount
- (2) Prone paddling
- (3) Knee paddling
- C. Wave Recovery (60 min.)
- D. Wave Approach (60 min.)
- E. Riding (2 hrs.)
- (1) Prone
- (2) Kneeling
- (3) Standing
- F. Review (60 min.)
- G. Test (60 min.)

### UNIT VII

#### Boating

This is a new addition to our curriculum, whose aim is to teach our students to use as many mechanical means of motivation as possible.

- A. Orientation (60 min.)
- B. Canoe (60 min.)
- (1) Mount and dismount
- (2) Maneuvering
- C. Rowboat (60 min.)
- (1) Mount and dismount
- (2) Maneuvering
- D. Sailing (2 hrs.)
- E. Powerboat (60 min.)
- F. Review (60 min.)
- G. Test (60 min.)

### UNIT VIII

#### Water Skiing

Surprisingly, the easiest skill to teach is water skiing. We find that even the most unskilled students can master the art within an hour. Usually in just two or three tries the student finds himself coming out of the water and skimming along the surface with remarkable ease. A simple order of progression to follow is:

- A. Orientation (60 min.)
- B. Dry Land Drills (60 min.)
- (1) Balance
- (2) Take-offs
- (3) Turns
- (4) Landings
- C. Double Ski (2 hrs.)
- D. Single Ski (2 hrs.)
- E. Review (60 min.)
- F. Test (60 min.)

### UNITS IX AND X

#### Review and Testing

The emphasis the instructor wishes to place on portions of the course will determine to a great extent the manner in which the last two units are organized.

**Equipment.** Normally, an all-out aquatic program would cost a school far in excess of what it would wish to pay. Roughly speaking, for a class of 20 students the minimum cost for equipment would run about \$2500 on bids. Equipment can be itemized as follows:

1. Boat, trailer, motor, registration	\$1500
2. Skis and tow lines (3 pair)	\$ 150
3. Fins (10 pair)	\$ 40
4. Snorkels (10)	\$ 12
5. Aqua lungs (3)	\$ 300
6. Spears (10)	\$ 120
7. Surfboards (5)	\$ 300
8. Rowboat	\$ 100
9. Canoe	\$ 100

With a little ingenuity, many parts of equipment can be secured at little, if any, cost. In fact, we've been able to operate almost absolutely free of financial obligations. By selling our program to friends, acquaintances, and local businessmen, we've found that they're more than happy to offer their aid.

This is especially true of sporting goods dealers, who see the value of lending their equipment to the school in the hope that the student will eventually buy the product after he has developed an interest in the sport.

**Facilities.** Since our swimming pool is still on the drafting board, we use such natural resources as nearby lakes and dams for swimming, water skiing, and life-saving instruction. Several times a privately owned pool was offered the class by a local resident. Of course, the beautiful Pacific Ocean furnished us with plenty of roaring surf and cozy inlets for our body surfing and skin-diving activities.

Except for the oceanic surf, it's possible for nearly any school to provide facilities (natural or constructed) for their program with a minimum of expenses.

**Schedule of Classes.** In some parts of the country it would be nearly impossible to activate a program during the winter months. This is a problem that the individual school must adjust to, but we've found that the aquatic skills course can be applied in the Los Angeles area throughout the year.

#### EIGHT-HOUR SESSIONS

For best results, we've found that one eight-hour class session every two weeks proves most satisfactory. In this way the class can stay with the activities until the habit pattern begins to develop. Also, the continuous eight-hour session eliminates many hours of travel to and from the instruction area. A final reason for running the class on the "one on and one off" basis is that it permits the student to practice the following week on his own.

**Conclusion.** With a minimum of expense, the physical education department can administer one of the most provocative and captivating learning experiences in the entire school curriculum. All that's needed is an adequate body of water coupled with a little departmental ingenuity. The physical educator can then achieve one of the most enjoyable and stimulating teaching experiences of his career.

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Selection of the qb; training; seven laws of generalship; qb and captain manual; starting count, cadence, and audibles; drills; forms and charts; relations of qb, captain, and coach; using the running game; using the passing game; teaching defense; generalship of downs; effect of score and time; and summary of successful quarterbacking.

All the ideas and methods are completely modern, attuned to today's football. This is a beautiful coaching aid. It ought to help any coach make good qbs out of mediocre ones, and great qbs out of good ones.

- WRESTLING ILLUSTRATED: AN INSTRUCTIONAL GUIDE. By Raymond E. Sparks. Pp. 118. Illustrated. New York: The Ronald Press Co. \$2.95.

ORIGINALLY designed as a syllabus for teachers and students at Springfield College, the materials in this book have also been successfully used by wrestlers and coaches throughout the country.

The author, one of the country's great wrestling technicians, presents the fundamentals in a progression specifically designed for efficient learning. He explains and illustrates in detail 65 maneuvers, arranging them in 38 sequences and drills.

The sequences teach the basic techniques through step-by-step instructions, with each step given in full detail and keyed to an accompanying illustration. The photos are superb, graphically illustrating the holds, counters, and blocks. An outline for 30 lessons suggests a scheme for individual and class instruction.

This is a superb tool for wrestler, coach, and instructor.

- WINNING WITH ORGANIZATION. By Pete Ankney and Jim Hoover. Pp. 208. Illustrated—diagrams and tables. Kettering, Ohio: Ankney and Hoover. \$3.50.

ESCHEWING the technical phases of offense and defense, the two hugely successful football coaches of Fairmont (Ohio) High School offer an excellent treatise on the vital problem of organization.

## PHYSICAL ACTIVITY IN MODERN LIVING

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- **VOLLEYBALL (2nd Edition).** By Robert E. Laveaga. Pp. 128. Illustrated—drawings. New York: The Ronald Press Co. \$2.95.

IN keeping with the many changes in volleyball since this book was originally published in 1942, the author has completely rewritten his fine text.

He thoroughly analyzes both the power and recreational games, explaining and illustrating all the individual and team fundamentals. He offers a training program for intensive competition, as well as sections on officiating, equipment, class organization, and volleyball for girls.

Both coaches and gym instructors will find this book invaluable in promoting their programs.

#### Miscellaneous

- **Principles and Techniques of Supervision in Physical Education.** By Leslie W. Irwin and James H. Humphrey. Pp. 348. Dubuque, Ia.: Wm. C. Brown Co. \$4.50. (A practical text, published originally in 1954, offering a comprehensive treatment of the many aspects of physical education in terms of improvement of the teacher-pupil learning situation.)

- **Philosophy of Recreation and Leisure.** By Jay B. Nash. Pp. 222. Dubuque, Ia.: Wm. C. Brown Co. \$3.50. (A splendidly written book by one of the country's administrative titans, on the leisure-time activities of adolescents and adults.)

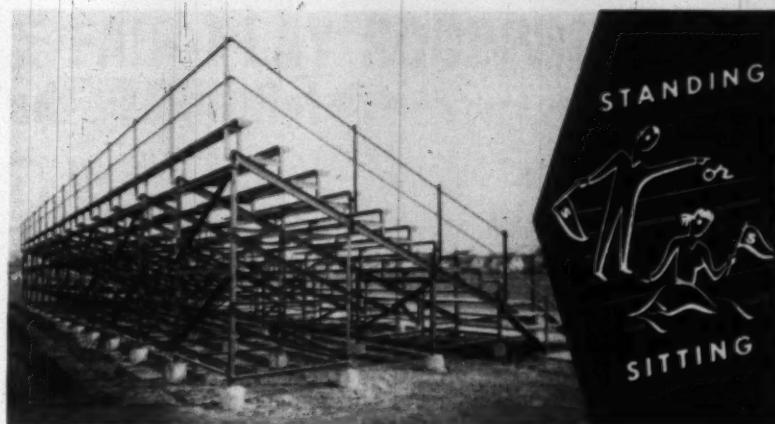
- **Physical Education for Today's Boys and Girls.** By Gladys Andrews, Jeanette Saurborn, and Elsa Schneider. Pp. 431. Illustrated. Boston: Allyn and Bacon, Inc. \$6.75. (A beautifully put-together text that perfectly dovetails the dynamics of growth and development with practical teaching tools such as games, stunts, rhythms, and dance.)

- **Physical Activity in Modern Living.** By Huss, Friedrich, Mayberry, Niemeyer, Olson, and Wessell. Pp. 122. Illustrated. Englewood Cliffs, N. J.: Prentice-Hall, Inc. \$2.50. (An effective foundation for a logical selection of physical education based on the needs of the individual, as prepared by the Michigan State University staff.)

- Official Girls and Women's Guides, prepared by the AAHPER, Washington 6, D. C.

- **Soccer-Speedball Guide, Including Fieldball (July 1960-July 1962), \$1.**
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# Influencing the Backcourt Man

(Continued from page 31)

man defense, we could complement the zone press, and this, in turn, could complement our pressure type of defense. In short, we play both ways, but each is a distinct defense in which the team members have a complete understanding of their responsibilities. These differ, as you can well imagine.

**ADOLPH F. RUPP, Kentucky:** We've always preferred to drive an opponent to the outside rather than down the middle. We know this is contrary to other coaches' ideas, but we think we have a point. Some coaches prefer to influence the offensive man to the middle, where they can concentrate their middle strength. We think we can better control the offensive man by preventing him from coming down the middle and forcing him to the outside. We feel this enables us to concentrate our defense far better and at the same time compel the opponent to take an angle shot rather than a shot directly in front of the basket.

In other words, we won't give you the middle; we'll give you the outside, feeling we can cut down the percentage on the shot. To implement this, we have the inside foot back and the outside foot and hand up. We use more of a boxer stance than many coaches, and discourage the wide open stance as much as possible.

**FRED SCHAUSS, West Virginia (Los Angeles Lakers):** We often employ a full-court man-to-man press to create a running tempo for our own offense. The defensive stance we prefer is the one in which the individual feels most natural. That is, we don't insist upon having one foot or the other forward relative to the side of the court he may be on at a particular time. Through scouting information, we strive to drive the offensive man to his unnatural side. For instance, if he prefers to go to his right on a drive, we'll play him in a way that encourages movement to his left.

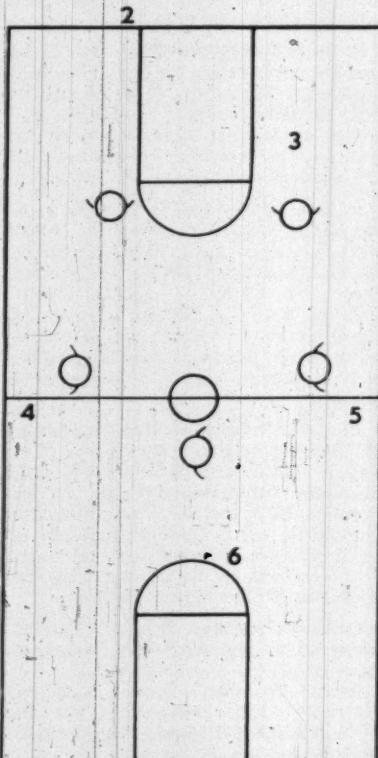
Primarily, we prefer our guards in a full-court situation to fake and retreat so as to make the offensive man commit himself, and at the same time retain good defensive body balance. Seldom, if ever, do we want our guards to reach in for the ball in defending against the dribble.

**HAROLD L. BRADLEY, Texas:** We vary the way we try to force the backcourt offensive man, depending upon the opponents' pattern and strength. Sometimes we try to force him inside, sometimes outside. If we're forcing him in, we straddle his outside leg, placing the outside foot a little ahead and the outside hand up at the ball—always ready to intercept the inside threat.

**FORDDY ANDERSON, Michigan State:** We try to force our opponent to go down the middle. We overplay as much as two or three steps, with the outside foot up and the inside foot back. We try not to foul, but to force the opponent into a mistake. The accompanying diagram shows our footwork with respect to the ball.

**HENRY P. IBA, Oklahoma State U.:** We feel that the defensive man's job is to make the backcourt attacker do what we want him to do—and our policy is to drive the opposing guards to the sidelines. We use a staggered stance with either foot in front, whichever is most comfortable for the player. We try not to use the hands unless the opposing guard exposes the ball, gets in his shooting area, or attempts to catch the ball in our defensive area.

**JACK GARDNER, Utah:** When employing a switching man-to-man press in the backcourt, we try to force the man with the ball down the middle, where our weak-side guard can help out. The man taking the ball keeps his outside foot up and overplays the dribbler slightly to the outside. If the



Anderson's theory of footwork

dribbler is successful in driving down the sideline, we try to trap him with the help of the sideline. When pressing, we're aggressive and extremely active with both hands in order to keep maximum pressure on the ball at all times.

**FRED TAYLOR, Ohio State:** Assuming all things are equal, we attempt to influence the offensive backcourt man to go down the middle—where we hope we can find help. We believe it's a most difficult task to contain a man in a one-on-one situation. Our defensive man uses a stance with his inside foot forward and his inside hand up. We hope to be in a position that eliminates the attacker's opportunity to go to the outside. But certain abilities or limitations of the attacker may force us to change our initial defensive position.

**FRED (TEX) WINTER, Kansas State:** When defending a backcourt man in an aggressive press type play, we try to influence the dribbler to the outside. We feel that this gives us the sideline as a sixth defensive man. Once the dribbler commits himself to the outside, we try to force him to stay outside, thereby restricting his operating area to just one side of the court.

This sends a telegraph to the back-line defense, affording them the opportunity to support a smaller area behind the dribbler. Most of our defensive pressure can then be placed on the forward playing the sideline; the guard is forced to use. We try to prevent the guard from passing the ball down this sideline. If the offensive forward clears out, the pressure is then placed on the center and comes from the open area created by the forward's clear-out action. Weak-side defensive men are alert to "help the helper."

We don't influence to the middle because most teams will clear out the weak-side guard, thereby creating a one-on-one situation—and this type of situation is very difficult to defend with pressure, especially when the dribbler has plenty of area in which to operate. We feel that, under these

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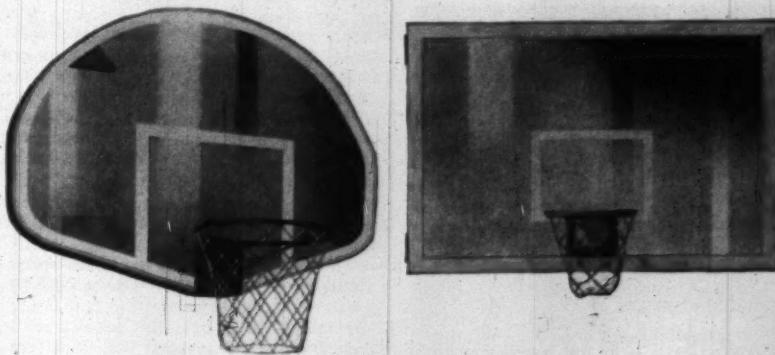
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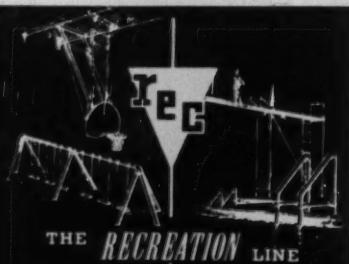
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conditions, he can hurt us more in the middle than at the sidelines.

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We don't believe in having the weight on either the rear foot or the front foot. We want our players to be low, on balance, under control, with the weight evenly distributed on the balls of the feet. This places the man in a stance that will enable him to move quickly in any direction. The defender's relative position on his man varies with the type defense we're playing—pressure defense, token pressure defense, normal defense, or sagging defense.

**EDDIE HICKEY, Marquette:** The question of "influence" depends on the strategy of the over-all team defense. Orthodox coverage in the backcourt area requires position between the offensive player and the goal. The staggered stance (one foot forward and one foot back) may be used against either the man with or without the ball. But the square stance (both feet parallel) shouldn't be used against a man with the ball.

Ordinarily, stance (position of feet principally but with the combined alignment of the entire body) immediately arranges strength to one side or the other. I believe the strength is toward the open portion of the immediate stance—opposite the forward foot and flowing toward the position of the rear foot.

In the area of the offensive feeders—in meeting the ball—I advocate the inside foot (closer to the middle of the court) being forward. But when covering along the area of the base line, the opposite stance should be used.

Thus (in the back court) the defensive strength is to the outside, and the weak side is toward the middle of the court. In short, the weakness in our coverage is toward the area from which we may reasonably expect assistance from our teammates.

Again, the challenge against the ball outcourt must depend on the over-all strategy of the team defense. Ordinarily the battle-line, in consideration of distance from the goal, should be set approximately two strides ahead of the circle. There must be some pressure at the point of the ball. Without pressure there could hardly be any influence. The defensive position must be in sequence to defend against (1) the scoring effort, (2) the drive, (3) the pass, and (4) the cut to advantage.

The cry "keep your hands up" on the defense is a fallacy. When the ball is handled above the waist (threat of a scoring effort now available), the same hand as the forward foot should be up—the other low and to the side.

Without the threat of the shot or pass, both hands should be down. The thrust of the hand in ball stabbing is the basis for defensive weakness and kills continuing correct defensive position.

When covering the first player away from the ball, there must be sagging to the fullest extent possible and commensurate with the over-all team strategy. But here the stance changes. The foot which is the greatest distance from the teammate covering the ball must now be forward in the staggered stance.

Influencing the offensive man needn't necessarily follow the strong or weak side of the defensive stance. If all things are equal (no pressure defense or special strategy involved), whether against the man with the ball or against the man without the ball, I'd advocate influencing the offensive player outside.

Against the ball, the rule should be: influence the offensive move to your strength. Failure in this objective still leaves the possibility of team coverage from the inside, where help may be expected from teammates originally covering away from the ball. The geography of the court never changes—the score is made at the goal and this is the crucial point of coverage in all types of team defense.

## **Swimming Decathlon**

*(Continued from page 37)*

within three days following the meet.

### **PROGRAM OF EVENTS**

The first Decathlon was held at Beaumont High three days after the Missouri State finals. Twenty-four swimmers, an ideal number, competed in six squads of four each. Placement in squads was done by lot, and each lane was timed with three watches.

With six squads, each event took 30 minutes to run off and tabulate. The standings and running score were announced after each event. This much time proved sufficient for the swimmers to recuperate and go on to the next race.

The recommended order of events with the point scores of the winner, Don Schnure of Ladue, was as shown on page 37.

Fifty-yard distances are substituted in a longer pool, with the 150 individual medley replacing the 120.

Marks in "Decathlon" competition are recorded from two angles: (1) Total Points scored by an individual competing in 10 events over a two-day span, and (2) Best Times in a single event while competing in the full "Decathlon."

The asterisks on Schnure's performances indicate the four events in which he posted best times. Three

others posted individual records in their specialty:

40 Free	19.8	D. McIntosh (Webster)
40 B-Fly	21.3	G. Lutker (Cleveland)
100 B-Fly	1:03.1	G. Lutker (Cleveland)
120 I-Med	1:16.5	G. Lutker (Cleveland)
40 Breast	24.8	T. Ashton (Ladue)
100 Breast	1:12.1	T. Ashton (Ladue)

We've had the table printed in quantity along with the steps to follow in staging a Decathlon and will make them available as a kit for one dollar. We hope a number of coaches throughout the country will share our enthusiasm for the idea and sponsor the event in their area.

Annual results and records will be printed in the NCAA guide. Anyone bettering the point total record or an individual record will be recognized in an annual report.

The Decathlon serves as a fine added attraction to the swimming season. The boys who've already participated and their coaches are extremely enthusiastic about it.

In our first meet, the total-points standings of the top 10 swimmers fluctuated with every event, and in the final count only 110 points separated the fourth through eighth places. Medals were awarded to the top six. Each session took two and a half hours to complete.

We feel the decathlon has value for the top-flight swimmer, limited to two events in regular competition, to demonstrate his full versatility. To score well, he must possess an abundance of stamina and versatility; and he'll realize a great measure of satisfaction after completing the Decathlon.

Though this decathlon was devised for high school-athletes, it can also be easily adapted for college, YMCA, and club groups.

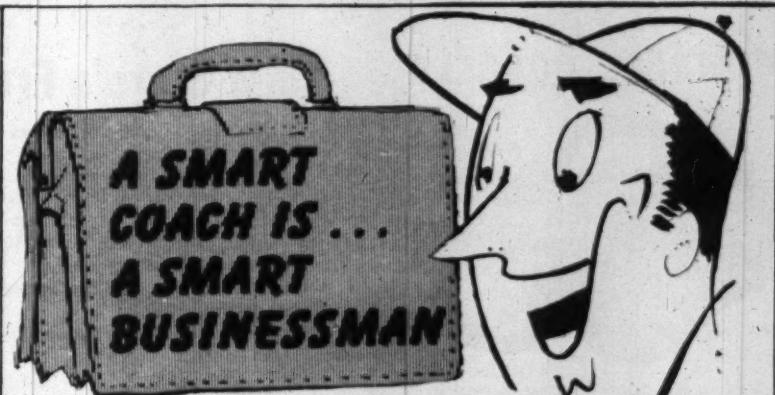
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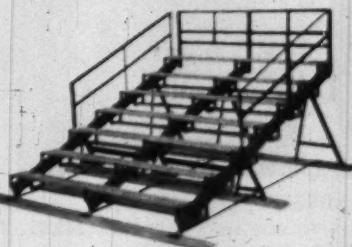
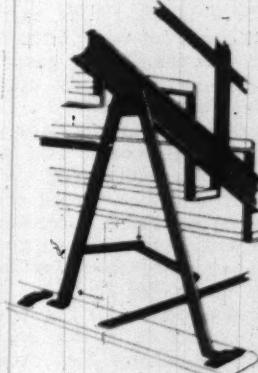
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## Ohio State's Front-Court Moves

(Continued from page 7)

"secondary offenses," with the realization that against certain opponents these offenses definitely become of primary importance!

1. Offenses vs. the various zones and their combinations.
2. Offenses vs. half and full-court pressure defenses.
3. "Save the game" or "deep freeze" offense.
4. Out-of-bounds plays.
5. "Emergency score."
6. Jumpball plays.

We're a running team first because we believe that players like to get out and go. Our first thought is to break whenever we intercept a pass or get a defensive rebound. We don't attempt to break after our opponent scores, because we feel that it could be detrimental to our defense—i.e., "let 'em score so we can run."

Our players shoot with relative freedom on the break, providing we have equal numbers or better down-floor. Like many others, we believe that a 15' jumper is a good percentage shot off the break, and we'll settle for that.

We do ask that the shooter not "take off" under pressure. This presents a problem, since it's often quite difficult to say where the fire-wagon brand should end and the patterned front-court offense should begin.

Assuming there's no opportunity to break, we initiate our patterned front-court play. We use approximately seven basic patterns in addition to our guard clearout, which we'll diagram as we go along.

We prefer a penetrating pass rather than a lateral cross court pass to start our front-court offense. Quite often, this penetrating pass is impossible. So we must rely upon our so-called "automatics."

The first option is for our strong-side cornerman to reverse and go baseline for a possible feed. We fully realize this isn't a "bread and butter" maneuver, but a successful completion will often serve to give our cornerman more room for his playmaking (Diag. 1).

The second option is for our post man to come out to a side high position for the direct feed from the guard and perhaps the "splitting" or "squeezing" action by the strongside guard and strongside cornerman (Diag. 2).

If pressures don't permit these

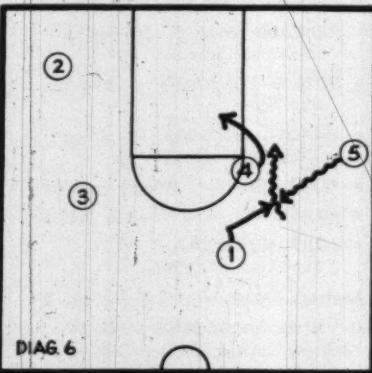
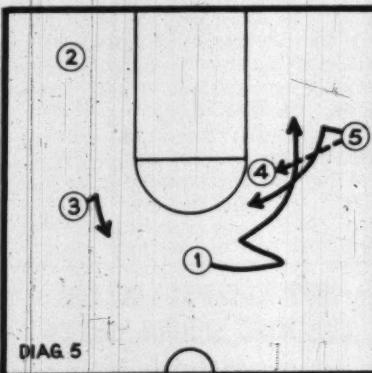
two options, we attempt to make the cross-court pass to the weakside guard and start our offense from that side of the floor. Should the weakside guard be contested, we attempt to run our third option automatic—the back door. The weakside corner breaks into the weakside high post for a diagonal feed, and the weakside guard breaks off him for a two-man game (Diag. 3).

Our guard-clearout pattern (Diag. 4) begins with a pass to the cornerman, with the guard going down through the lane area and establishing a weakside corner position.

Quite often, it's possible for this clearout man to screen for the post man. The corner has a one-on-one situation first, then thinks of hitting the post to start a splitting action with the weakside backcourt man.

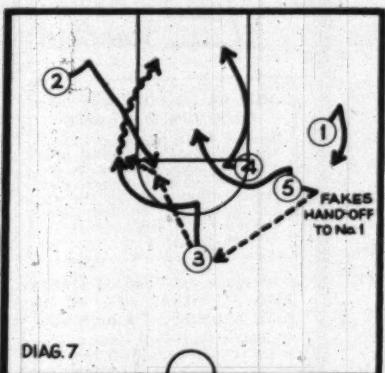
We start our split, even though the post has the ball in the low post in order to give us rebound strength.

If the post cannot maneuver in low, he must come as high as possible to receive the pass (Diag. 5).



Should it be impossible to hit the post, our corner drives high across the middle for a two-man game with the weakside guard (Diag. 6).

The weakside corner man fills out on top for balance and makes himself available for an outlet pass. Thus, he, and the original strong-side guard may play a weakside two-man game (Diag. 7).



We attempt to run our patterns to both sides of the floor, and hope that we'll be able to distribute our scoring throughout our unit. We've been most fortunate in having fine material—some excellent shooters, some excellent rebounders, and, most important, morale.

Each player has dedicated himself to getting into top physical condition and has exhibited a willingness to sacrifice for the best interest of his team and school.

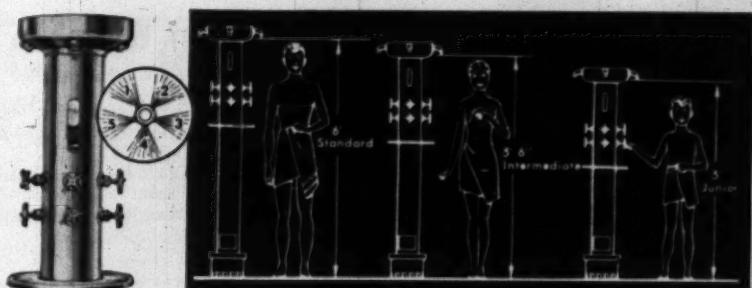
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## Problem of Warm-Up

(Continued from page 51)

cises might be beneficial was not tested. The results agree with observations at Springfield College."

Skubic and Hodgkins<sup>32</sup> did a study of the effect of light warm-ups on performance in strength, speed, and accuracy. They concluded that:

"1. Neither the presence nor absence of light warm-ups of short duration appeared to affect significantly the performance of players of average skill.

"2. Although not statistically significant, scores generally improved as a result of practice.

"3. While there was no significant difference among scores in three different activities using three methods of warming up, a slight tendency toward better scores was not noted in tests which were preceded by related warm-ups.

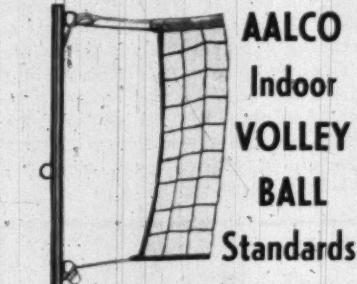
"4. No injuries resulted from an absence of warm-up activity, nor was any muscle soreness directly attributed to failure to warm up prior to performance."

After reviewing the related literature, it would appear that warming-up is beneficial for improved individual performance in an athletic activity. It should be remembered that these findings aren't conclusive in themselves. No one has as yet determined the extent of warming-up for individuals per activity and per condition.

However, since warm-up does seem to improve performance, each performer will have to decide the extent of his own level by trial and adjustment.

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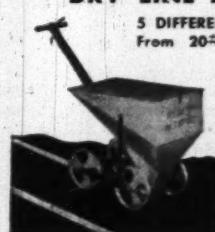
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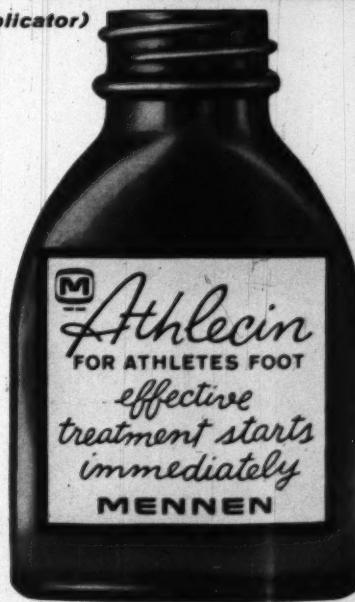
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